Four weeks and four events later and the first strand of the PLAN C (Professional Learning And Networking for Computing) programme has officially begun. After two events in the University of Glasgow, one in Robert Gordon University in Aberdeen and two afternoons at Craigmount High School in Edinburgh teachers from across Scotland have had a chance to experience professional learning specifically designed for Computing Science.

The PLAN C team opened with an exploration of our current methods of teaching programming and then an overview of research that helps us to understand why certain aspects of Computing Science can be difficult for some of our pupils to understand. At its heart, we’d like to develop pupils’ understanding of the hidden machine so that they become more confident forming and testing predictions about the behaviour of digital devices rather than just becoming programmers and Computer Scientists.

Encouraging discussion about what we think is happening and, most importantly, why, came to the fore when Peer Instruction was introduced next. This technique has successfully been used in Physics and Computer Science to strengthen students’ conceptual understanding with it proving to be twice as effective as a more lecture based format. In Peer

#CASSCOT13 KEYNOTE
PROFESSIONAL LEARNING AND NETWORKING FOR COMPUTING
Dr. Quintin Cutts, National Project Officer for PLAN C

Continued on page 7...
This year I am delighted to be working with Nesta as their Digital Education Manager for Scotland. Our aim is to equip the young people in Scotland with the skills which will allow them to create great digital content, not just consume it. Whether young people are looking to pursue a career in the digital world or not, we believe that enabling our young people to understand how digital technologies are made, and have the power to make their own, will support them to fully participate in modern society.

Working with the Scottish Government, we are tasked with creating a variety of opportunities for young people and their teachers to learn more about digital making. We are running One Day Digital CPD events, offering teachers in Scotland the chance to learn digital creativity skills within the context of the Curriculum for Excellence. Our first event is in Edinburgh on Saturday 23rd November. If you would like to come along and learn web development, mobile app development, animation, video editing, 3D printing, python computer game character design or processing visual programming then you can get more information on http://bit.ly/cass4-5.

This year I will also be working with two clusters of schools to implement best practice examples of digital making, helping kids get hands on experience in app building, game development and website creation. Nesta will work with these schools to support the use of technology learning across the curriculum. During this time we will be developing resources as well as sourcing the excellent existing resources available on various digital creativity topics and making these available to other schools and teachers.

We are also working with Young Scot to offer a range of digital work experience places to young people with a host of different companies across the country. These placements will allow the successful applicants to get hands on experience with industry experts and allow them to more fully understand the requirements for a career in their chosen field.

Take a look at the Make Things Do Stuff site (http://bit.ly/cass4-1) for digital making opportunities for young people. This platform features a wide range of different projects, events and learning across the UK, a great place to connect, learn and share!

If you have any questions about this programme please email us at: digitalmakersscotland@nesta.org.uk

Kate Farrell

Promoting Digital Creativity with Nesta

This year NESTA have seconded Kate Farrell as their Digital Education manager for Scotland. They are aiming to improve the opportunities available for young people to learn how to become digital media creators rather than only consumers.
Cyber Security is a UK Government “Tier one” threat. There is never a day when Cyber Crime is not in the newspapers from state sponsored cyber-attacks, financial crime and identity theft all the way to cyber bullying and blackmail. It is recognised that the nation has an ever increasing need for new Cyber Security professionals with the skills gap projected to last until past 2025.

SICSA (Scottish Informatics and Computer Science Alliance) in partnership with the Scottish Government and key supporters are planning a series of fun and engaging Cyber Security lectures in the week before Christmas in Glasgow, Edinburgh, Dundee and Aberdeen (16th - 20th December). The purpose of these lectures will be to educate and inform High School pupils and teachers of the opportunities that are available for a career in this field but also to give age appropriate advice of the dangers that exist. Overall the intention is to raise awareness of all aspects of Cyber Security in an enjoyable series of lectures in a local University setting.

In 2012 SICSA ran a pilot lecture in Edinburgh Napier University. While it was expected that around 60 pupils would turn up it was found that the interest for this sort of event was hugely underestimated and the attendance was ultimately in excess of 600. Each session will have three or four speakers on different topics and most will be interactive building on the success of last year’s pilot.

Across the four days it is expected around 4000 Scottish High School pupils will have attended the lectures.

For more information and to sign up: http://bit.ly/cass4-4

Martin Beaton, SICSA Cyber Security (martin@informatics-ventures.com)
KEYNOTE: CREATING A DISCIPLINARY COMMONS

Sally Fincher is Professor of Computing Education in the School of Computing at the University of Kent, where she leads the Computing Education Research Group. Her work is centrally concerned with the teaching and learning of Computing, with particular emphasis on teachers and teaching practices. She has worked on several major computing education projects, such as the Bootstrapping Research in Computer Science Education series, and the UK “sharing practice” project. She is Editor-in-Chief of the Journal Computer Science Education (jointly with Laurie Murphy), a UK National Teaching Fellow, a Senior Fellow of the UK Higher Education Academy and a Fellow of the Royal Society of Arts.

“Classrooms, Kitchens and Farms: Exploring the Narrative Nature of PCK”

In this talk, Sally will draw on work from a variety of domains, highlighting similarities across them in how knowledge is gained, expressed and transferred.

She will use this analysis to explore the nature and construction of Pedagogic Content Knowledge (PCK) and to think about ways in which it might be supported and developed.

Sally’s research and analysis relates directly to the idea of professional learning communities amongst teachers; a model that the PLAN C programme is built around.

KEYNOTE: WHAT INDUSTRY REALLY WANTS

With a degree in Computer Science from the University of Glasgow, Alastair heads up Amor’s Public Services Sector. With over 30 years experience of the IT industry he is still on the lookout for the next challenge. Having grown the sector from zero to one with revenues of over £25 million, he expects nothing short of ‘world domination’ to follow. When not masterminding plans of global conquest, he likes nothing more than a pint of real ale in the Tennents bar in Glasgow’s West End.

We’re in the middle of a digital revolution, IT is everywhere, affecting many aspects of our everyday lives, we are living with an Internet of Things. Yet the IT industry in Scotland is crying out for new talent and that talent is simply not there. The numbers of pupils taking Computing as a subject has dropped and 27% of Scottish schools don’t teach computing. Alastair’s presentation is a plea from the industry to educators to help raise the level of interest in Computing and open up a hugely exciting industry with fantastic job opportunities.

KEYNOTE: COMPUTING SCIENCE AND CREATIVITY

Prof. Yen Yau manages Second Light, a skills development programme devised and managed by First Light. It seeks to reach and engage a wide range of young people from disparate backgrounds and abilities, bridging the gap to the programmes and courses that feed talent into the film industry.

Hugh is a Visual Effects Supervisor who has worked in the Visual Effects industry for 10 years. He started his career with a degree in Computer Science, and began his career developing software. He now looks after teams of Visual Effects Artists generating the imagery you see in films like Frankenweenie, Skyfall and Kick Ass 2.

They will be presenting an overview of what goes into creating Visual Effects for films, and how it has changed what is possible to show on screen in recent decades. They will give an overview of how important computing has become to build the fantastical worlds, and what is involved in developing the tools to take your imagination to other planets, or back in time. They will also be discussing how an education in computing can lead into the Visual Effects industry, and what options there are for students who might be interested in a career that combines both the technical and the creative.
CONFERENCE SESSIONS: SEMINARS ( ), WORKSHOPS ( ) AND FORUMS ( )

This year, CAS Scotland is proud to present 27 unique Seminars, workshops and lectures at the conference. Also for the first time there are specific sessions aimed at the primary sector to help colleagues deliver the Computing Science Experiences and Outcomes at all levels. Here’s a flavour of what’s on offer, and more details are available on the website: www.casscotland.org.uk

**CREATING RESOURCES FOR THE FLIPPED CLASSROOM**
Charlie Love, Aberdeen City Council Education ICT

In this session Charlie will discuss the model of flipped learning, his approach to creating flipped resources to support flipping his own classroom. His approach will discuss mastery learning, personalisation, formative assessment and why the computing classroom is the ideal location to flip. He will share some of the on-going research into the success of the flipped classroom and some great resources to help you get started.

**PROGRAMMING WITH LIVECODE**
Kevin Miller, CEO RunRev Ltd, Developers of LiveCode

This LiveCode Introductory session will take you through creating an interactive eBook and a side scrolling game. With Owl Story, we will create a short, 1 page example of an eBook, demonstrating working with text, animation and sound. Hot Air Balloon game demonstrates working with images, controlling an on-screen element, and detecting collisions.

**SCRATCH IN THE PRIMARY SCHOOL**
Karl Barr, Primary Teacher, Fife Council

Karl is a Primary teacher in Fife with a passion for engaging pupils in meaningful, motivating, creative and relevant learning.

In this session Karl will demonstrate his work using Scratch in the primary sector to deliver some of the Computing Science Experiences and Outcomes.

**APPS FOR GOOD: YOUR QUESTIONS ANSWERED**
Debbie Forster, CDI Apps For Good

In this session Debbie will showcase the Apps for Good programme. Apps for Good is an opensource education programme that aims to build the next generation of problem solvers and makers: students who can create, launch and market new products that change the world.

In the year-long course, students work together in teams, finding real-life issues they want to tackle and how best to solve them through technology. Students take their idea through the complete product development process – from feasibility research and deciding on business models to product design and marketing.

The course culminates in the national Apps for Good competition, in which the best app ideas from our 20,000 students are launched commercially.

More information is available at www.appsforgood.org

**NATIONAL 5: DO NOT BE AFRAID!**
Wendy Reith, Principal Assessor National 5 Computing Science

Wendy aims to answer some of the frequently asked questions about the new National 5 course, and discuss approaches to assessment. Wendy is an experienced teacher of Computing who has previously held positions with the SQA, and is the Principal Assessor for the National 5 course.

**INVESTIGATING WHAT STUDENTS FIND DIFFICULT IN CS**
Dr. Sue Sentance, Network of Excellence National Coordinator

In this talk Sue will report on some research she did in school with students struggling with Computing, discussing the processes involved in the investigation as well as the findings. She will also talk about the benefits and challenges of teachers carrying out practitioner research in their own classrooms.

**SCRATCH TO KINECT**
Stephen Howell, Institute of Technology, Tallaght, Dublin

Kinect2Scratch allows data from the Microsoft Kinect controller be sent to Scratch, the programming language for kids from the MIT Media Laboratory.

In this session Stephen will demonstrate Scratch 2 Kinect and discuss and demonstrate a variety of classroom projects in Scratch using this amazing technology. Motion control and gestures + Scratch = an amazing world of possibilities.

**PROGRAMMING WITH GREENFOOT**
Dr. Neil Brown, Computer Education Research Group, Uni. of Kent

This hands-on workshop will introduce participants to Greenfoot, a programming environment for novices aged 14+. Greenfoot allows users to produce games and simulations using the Java programming language, but free from the unnecessary clutter of professional tools. Open to all: no previous experience or exposure to Greenfoot is required.
Kodu was developed by Microsoft Research’s Fuse Labs and is aimed at enabling an interest in games design and programming in learners. It uses a visual set of design and coding tools and is controlled using either the Xbox 360 Controller or a keyboard and mouse. In this session Brian will lead you through creating the basics of your own game world in Kodu.

Bill’s presentation will look at the opportunities in CS and discuss the N5 syllabus for Computing Science and how this maps well to the key skills that pupils will need to continue into university study. It also aims to present some of the methods which have been used to generate interest in Computing with Cipher Cracking activities within IT4U and Christmas lecture events.

Laura is the driving force establishing Lambda Jam, after lamenting the fact that the First Lego League contest stopped in Scotland many years ago. While completing her PhD at the University of Edinburgh (Informatics), she became active in science enrichment, including Informatics Open Days for schools, and saw a need for more such programmes.

In this session Laura and Neil will run a hands-on session with the Lego Mindstorms EV3 kits, and demonstrate how they can be used in CS education.

During this hands on workshop you will get a quick introduction to BYOB, a free development environment built on Scratch 1.4 (if you know Scratch you know BYOB). Participants will work in pairs to create a two person networked chat room using the BYOB/Scratch Mesh and see how to extend this to a three-, four-, five- ... person networked chat room.

The flipped classroom model involves the use information and communication technology as a pedagogical tool. In this model, the teacher post videos of lessons and material online in lieu of lessons in the class. Students then view the videos or material at home and spend their class time actively working as opposed to passively sitting.
Phil Bagge, Primary Computing Master Teacher

Phil is a CAS Regional Coordinator and CAS Primary Computing Master Teacher in England.

Hi this session, he will show how he has developed computational thinking in primary schools with a ‘computing-without-computers’ approach to teaching important concepts and principles.

David Renton, West College Scotland

David will provide an overview and demonstration of TouchDevelop, a brand new Application development platform from Microsoft, which allows anyone to create a mobile app on pretty much any device. The entire programming environment takes place inside an HTML5 browser and it has been designed to be used purely by touch (it also runs great on a standard PC). Apps can be tested instantly on any device which runs an HTML5 browser and everything created inside it is saved to the cloud. Within minutes students can create simple apps and see them running on their PC, Windows Phone, Windows Tablet, iPhone, iPad, Android Phone or Tablet.

TouchDevelop can create applications which can be published to the WP or W8 Store and it can also create Facebook apps as well as Web apps. David has created a games development curriculum using TouchDevelop and a free copy of this will be available at the session.

Clive Beale, Educational Development, Raspberry Pi Foundation

Clive is the Director of Educational Development with the Raspberry Pi foundation; he organises getting the Google-funded Raspberry Pis into the hands of kids who will use them. He also deals with materials and outreach for education. In this session he will demonstrate some of the resources for the Raspberry Pi, and how they can be used in your classroom!

Jody Greig, Magician

Jody is a former Computing Teacher turned magician who has developed materials to demonstrate the principals of Computing Science through magic!


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The Magic of CS in the Conjurer’s Classroom

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Regional CPD Days Mark PLAN C LAUNCH

Continued from front page

Instruction, pupils are asked a series of challenging multiple choice questions based around common misconceptions and through a process of discussion explore their reasoning.

Slowing things down and exploring useful information processes and structures away from the computer formed the basis of the session on Kinaesthetic Learning Activities. Many teachers in their careers have tried to illustrate some Computing ideas in one form or another but in this session they had a chance to examine how effective this approach is compared to the alternatives; KLA’s develop the same level of factual knowledge but are better at developing deeper levels of understanding and, in general, are more motivating so they’re worth the extra time and effort they sometimes need. The session also looked at particular activities from CS Unplugged, CS4Fn and CSInside that could be adapted for National 5 Computing Science and some design tips for teachers looking to create their own.

The last session looked at how we could use lots of small worked examples to help pupils develop their ability to trace and explain code, a critical skill if you want pupils to be able to write their own code later. Teachers were transported back to experience this from a pupil’s-eye view through the use of an unfamiliar language, Python. Key to this exercise is encouraging pupils to take a more exploratory approach to understanding code by trying out particular functions in the example to see what they do. After a group of programming concepts and ideas have been taught, exploring worked examples in this way really encourages students to verbalise their understanding, or lack of it!

At its heart, this strand of the PLAN C programme is about teachers having time to come together and explore new ways of thinking about and teaching Computing. From the majority of the feedback we received, attendees really appreciated the sense of community and common purpose at the launch events and we’re hoping to continue that trend when we develop the broader programme for local hubs around the country.

Quintin Cutts, Peter Donaldson and Kate Farrell

National Project Officers PLAN C

Regional CPD Days Mark PLAN C LAUNCH

Continued from front page

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National Project Officers PLAN C
CAS North-East continues its activities on the Moray Coast. Our next event will be a CPD day for local teachers and lecturers taking place on one of the two Moray INSET days in November in association with the local T-exchange group. Included in the day will be a visit to a local employer, Scottish Electronics Industrial Ltd (SEIL). The company wishes to employ more local graduates in STEM subjects at its base in Forres Industrial Park. It specialises in the design and manufacture of high performance electronics for a range of clients including the Oil and Gas Industry. In addition to this visit there will be a Raspberry Pi Training session utilising the 15 Google Raspberry pis given to the hub alongside computing-related workshops. These will include android programming and harvesting old printers for parts to help make a 3-D printer.

Craig Steele from Coderdojo Scotland has offered to help us with our plans to set up a free coding club for young people in Moray. We are hoping to have our first event before the end of the year.

I also presented a seminar at the recent Scottish Learning Festival on the theme of the Use of Memory Blogs in Intergenerational Learning. I focused on my ongoing work in schools and the related work with the two blogs www.moraymemories.co.uk and http://keithmemoryblog.wordpress.com/

Finally hub members are working on ideas for a computer-related event as part of National Science and Engineering Week in March 2014.

Claire Griffiths

DATES FOR YOUR DIARY

26th October: CAS Scotland Conference, Glasgow University

9th December: Computing Science Education Week, Events Nationwide

16th - 20th December: Cyber Security Lectures, Aberdeen, Dundee, Edinburgh, Glasgow