COMPUTING AT SCHOOL
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SWITCHED**ON**

COMPUTING
A NEW YEAR, NEW OPPORTUNITIES

Computing in schools is coming in from the cold. The new academic year sees a GCSE Computing qualification back on the curriculum for the first time in twenty years. The OCR pilot GCSE has been enthusiastically taken up by nearly a hundred schools. Many more have introduced computing projects into key stage 3 ICT lessons, spurred on by the free availability of some excellent products to introduce pupils to the fundamentals of programming. The 2nd annual CAS Teacher Conference in July showcased some. The message was almost universal. Wherever innovative teachers have introduced computing projects their pupils, frustrated at the repetitive nature of much that passes for ICT, have loved them. Attendees came away buzzing with new ideas to try in the coming year.

But there is much more to computing than just programming. Computing has a rich body of knowledge that helps explain the modern world around us. Computational thought has educational value for every child, not just those who may study it at a higher level. It develops transferrable, logical thinking skills. Centred on solving problems, you don't need a pc to engage children with lots of the concepts. Access to computers will become a significant issue in the coming year, with the increased demands of subjects trying to manage controlled coursework. There has never been a better time for ICT teachers to unplug their pupils and explore some tried and tested exercises introducing computing concepts to their children (and perhaps themselves). You'll find more details inside.

Miles Berry making the case for computational thinking at the recent CAS Conference

PUTTING OUR SUBJECT BACK ON THE MAP

CAS has come a long way in its short existence. There's a thirst among innovative teachers for putting excitement back into a curriculum increasingly seen as boring by young 'digital natives'. Up and down the country CAS hubs are meeting to discuss and swap ideas. Increasing numbers are getting SWITCHED**ON** to the ideas of computing. The buzz of teachers getting together around a common purpose is infectious. The word is out — getting pupils to think creates sparks that can light a fire.

The year ahead will be busy. CAS wants to build on previous successes — more local hubs, more student day schools and more teachers at our annual conference, now firmly established as a 'must attend' event. Thanks to the support of the BCS Academy we hope to put in place an infrastructure to move these initiatives forward and support teachers driving curriculum development. We want to develop a 'body of knowledge' articulating what computing is about. We want a web presence where teachers can share resources. We want a network of enthusiasts so teachers can find support from university departments and industry specialists. Above all we want to continue the debate about how best to put computing back on the educational map. Will you help us?

EDUCATIONAL BENEFITS OF KODU IN THE CLASSROOM

CAS were very pleased to welcome Matt MacLaurin, Chief Developer on the Kodu project, to conference. Matt travelled from the USA to introduce the initial morning session. He explained the rationale behind the development of Kodu, an interactive software tool for 8+ age children that promotes programming as a creative and heavily visual medium. It also has the benefit of building familiarity and excitement about programming from an early age. Promoted as an introduction to programming concepts, Matt backed this up with data from US and Australian school trials, which highlighted the broad educational benefits to students in many areas, being used in Art, English and Mathematics lessons alongside ICT.

In the subsequent workshop sessions Matt expanded on the practicalities of developing Kodu in a class environment. He emphasised that an adult's presence in the room was needed for the children to benefit from using Kodu when higher-level reasoning was required to overcome particular issues. Four insights that resulted from pupils using Kodu emerged as: programming being a creative process, pupils developing an early sense that they can program, programming being fun and an understanding that it can serve their interests. The skills that the students acquired, of analysis and communication, were also readily transferable skills, of value to many other disciplines.   *Claire Davenport*

Links to the conference report and resources showcased can be found in the web supplement (see back for details).

'HEADY EXCITEMENT' OF CAS TEACHER CONFERENCE 2010

The success of the second annual conference has established it as a key date for all teachers involved in promoting computing in schools. Claire Davenport reports on an inspirational day for all concerned.

The one-day conference was generously hosted again by the University of Birmingham, School of Computing. Around 150 delegates attended the main conference and over 70 the "Teachmeet" style pre-meeting on the evening of 8 July.

Andrew Herbert OBE, Microsoft Research Managing Director and Peter Dickman, Technical Manager, Google enthused delegates in keynote presentations. Emphasising that Cloud Computing was more than a buzz word, Andrew promoted the developments which would free up school dependence on existing hardware and software. Peter Dickman explored the idea of "Schools of the Future", and what should be learned there, stressing the importance of problem solving and algorithmic thinking given the speed of technological change.

John Stout demonstrates Build Your Own Blocks (BYOB) at the CAS pre-meeting

Workshop sessions offered exciting presentations on a variety of topics. Peter McOwan from Computer Science for Fun (CS4FN) demonstrated how magic tricks could be used in the classroom to show the importance of algorithms. Delegates came away with "The Magic of Computer Science", which unpicked the tricks and encouraged delegates to get out and start performing computational magic of their own. Michael Kölling and Neil Brown from the Greenfoot project offered interactive sessions on how to offer Java programming for 14 + students and Matt MacLaurin introduced Kodu (see left).

Allan Callaghan talked about running After School Clubs offering his own resources developed to inspire secondary students to jump into programming. Rebecca George, OBE discussed the issues behind the gender gap in computer science. Experienced Teacher Trainers stressed the importance of enthusing new trainee ICT teachers to take a passion for computing into the classrooms of tomorrow. Diane Dowling stepped through creating a simple Android application whilst Miles Berry highlighted Lego's WeDo platform and Scratch as accessible tools for 7-14 year olds. Roland Backhouse promoted his approach to Algorithmic Problem Solving and Aaron Sloman took a wider view in Computing – The Science of Nearly Everything. Further discussions included GCSE & A Level Forums and at Qualifications at KS4.

The day was best summed up by the feedback received from one delegate; "The CAS conference has made me feel so "heady" with excitement that I have still not come down to earth. It was so enjoyable and I got so much out of it. On reflection it was not so much what was said, but all the many helpful and interesting colleagues I met and chatted to. Hence a huge "thank you" for enabling this event to happen."

DIFFERENT LAND, SAME ISSUES: A SNAPSHOT FROM AMERICA

A group of teachers from Berkshire recently visited the United States to look at how ICT is used in schools. Graham MacLeod spent some time observing and talking to computing teachers and discovered they face similar challenges to those in the UK.

Five minutes into the lesson and the whole class is completely engaged. Together with around 15 students, two teachers from England are watching a masterful explanation of objects in Java. The classroom, perched high in the eaves of the gothic bulk of DuPont Manual High School is home to students who have made their way to the top of a complex and competitive public school system. This is Kentucky, a 'heartland' state. On the fringes of the historic 'South', DuPont Manual is part of Jefferson County, inheriting a difficult history of racial segregation followed by enforced integration. We're here to see how Computing is approached in the USA.

Computer Science is taught as part of the Advanced Placement program. This is a selective entry program that roughly equates to A Level. Until 2009 there was a choice in AP Computer Science, a short course, 'A', equivalent to a term at University and a more demanding course, 'AB' equivalent to a year. The 'AB' course has now been dropped due to poor take-up.

At DuPont, the teacher, Mr. P isn't yielding. He has found a college in Washington State which will give college credits for his more demanding course, so he still teaches recursion, big O, stacks and trees. Part of the reason for the decline, he explains is the choice of language, or rather, the lack of one. From 1984 to 1999 the course specified Pascal. There was then an unsuccessful four year experiment with C++. Since 2004 the language of instruction has been Java, with custom written libraries supplied by the exam board. Students must master a complex and extensive case study which requires a sound understanding of object orientation. It's a tough challenge. He doesn't believe that Java is a good introductory tool for students with no programming experience and therefore begins the course by teaching Scheme.

It's a curious contrast, the very prescriptive nature of the AP course, set against the extraordinary diversity of the state school system. There appears to be extensive choice. Schools specialise in groups of subjects (magnet schools) but also in approach, with parents able to choose 'traditional' or 'progressive' schools and strongly academic centres such as DuPont. By way of example, Eastern High, in the suburban fringes, is an ICT specialist school of some 2,500 students. As a result of its specialism it employs 16 ICT teachers. As they say, do the Math.

Our educational systems are fascinating contrasts, but the issues are the same. Computer Science has fallen out of favour and it's the job of outstanding teachers like Mr. P to keep the flame burning, ready for the next surge of interest. *Graham MacLeod*

AMERICAN COMPUTER SCIENCE EDUCATION WEEK

As part of an increasing effort to address the decline in computing, the US House of Representatives has designated 5 to 11 December as Computer Science Education Week. It aims to promote the recognition that computing touches everyone's lives, drives innovation, provides rewarding career opportunities and exposes students to critical thinking. Check the web supplement for the link to the supporting website which already contains valuable resources and videos you can use in your own lessons.

ROYAL SOCIETY LOOKS AT SCHOOL COMPUTING

Many of you will know that CAS produced a report called "Computing at School: the state of the nation" in 2009. (You can find a link to it in the web supplement.) This report gathered together the evidence that we are failing our students by teaching them too much ICT and too little Computing. It has served as a very useful manifesto as CAS was gaining momentum, but it was never going to be very influential in the corridors of power; after all, CAS is an informal working group that is only two years old.

So it is tremendously exciting news that the Royal Society has decided to form an Advisory Group to look into the question of "computing at school and the implications for the economic and scientific well being of the UK". The Royal Society is at the other end of the spectrum from CAS: it has been in existence for hundreds of years (Newton was an early member), and it has immense clout. Whatever report the Advisory Group produces will be listened to. The group is to be chaired by Professor Steve Furber, FRS, and several members of CAS have been invited to serve on it, including Simon Humphreys, Bill Mitchell, and myself. The aim is to finish work by about August 2011, with publication in November that year.

I have an increasing sense that CAS is pushing on an open door. Many people are concerned about the state of computing education at our schools; all we have to do is to make the case. We can't prejudge what the RS report will say, but it must be good news that a senior and influential body is paying thoughtful attention to the issue. See the web supplement for further links to news coverage of the Royal Society announcement.
Simon Peyton-Jones

ANIMATION 10 COMPETITION CELEBRATES RECORD ENTRY

The 3rd annual UK Schools Computer Animation Competition reached its climax at The Lowry, Salford Quays, on 9 July. Over 1,200 entries were submitted by some 1,600 schoolchildren. 50 children from 22 schools won prizes. More than 450 pupils and teachers attended the Animation Festival and Inspirational Computer Science Day at The Lowry. As well as the prize-giving, Professor Steve Furber gave an inspirational talk on the relationship between Computer Science and the human brain, and there were hands-on activities including BBC21CC Green Screen, Race The Baby, cs4fn, sodarace, 3D anaglyph graphics, Augmented Reality, and the University of Manchester Flight Simulator. See the CAS web supplement for links to all the winning films, and photos from the day. Next year's competition, Animation11, funded by Google, Electronic Arts, and the Granada Foundation, will launch in September, with a submission deadline of 1 April 2011. Start planning now!

Toby Howard

CS4FN ISSUE 11 OUT NOW

The latest issue of CS4FN's excellent magazine was published just before the summer holidays. Focussing on computer animation, it provides a wealth of articles that explore the computing behind the scenes.

Animation is everywhere, but the connection between animation, computation and technology goes way beyond films and effects. In this issue you'll find out how computer animation fits in with sailboats, light shows, wallpaper and bar fights. It even explains why a mechanical duck was a show stopping piece of early computer science. Wonderful supporting material for any pupil getting interested in Animation 11. CS4FN is available free on request. See the web supplement for more details.

ANYONE FOR ROBOTICS? INTRODUCING ARDUINO

Opportunities for students to program real control systems have diminished sharply in recent years. John Stout provides a brief introduction to a circuit board and IDE that are rapidly growing in popularity.

An Arduino (pronounced ardweeno) is a small circuit board, with a micro-controller (Harvard architecture), that can be connected to a Windows, Mac, or Linux system with a USB cable providing power and data connection. An IDE of the same name is used to program it (you can also use Eclipse/Visual Studio IDEs).

Since the files for it are Open Source lots of compatible boards are available. It's designed to have sub-systems called shields stacked on top of it: in the photograph above clockwise from top left are some examples: Ethernet, LCD screen, relays, colour graphics screen, XBee wireless transmitter/receiver, GPS system and aerial, RFID reader (and small glass tag), solar panel and battery (connected to an Arduino) as an alternative power source, and an Arduino to composite TV shield!

The programming language is based on C/C++. A sample 'Hello World' arduino program can be found in the web supplement (since most Arduino's don't have screens it simply blinks an LED). The boards are low cost (anything from about £13 each upwards), and the shields from a similar price upward (more complex shields costing a lot more than the Arduino itself eg GPS, Bluetooth). Sensors for practically anything imaginable are available: gases, alcohol, humidity, pressure, acceleration, … Servos can be connected too or more powerful motors through the motor shields: robots anyone? There are general purpose analogue/digital inputs/outputs, and pins that can used for special purposes such as I^2C and SPI for simple 'network' connections, and standard serial communications. As their popularity spreads, plenty of support material is appearing on the web. It's a great way to introduce students to interfacing the real world to computers.

John Stout

INITIAL SIXTH FORM STUDENT CONFERENCES LAUNCHED

CAS organised an encouraging initial series of one day conferences aimed at sixth form Computing students during the spring term. We report on the North West conference which was very well received by students attending.

Topics were varied, inspiring and delivered by excellent speakers. Martyn Amos (Manchester Metropolitan University) gave a session entitled 'Wetware' - an introduction to biological computing. Sean Bechhofer (School of Computer Science, University of Manchester) introduced his work in the use of social networking and semantic web technologies to support practicing scientists. Toby Ternent (an MSc Bioinformatics student at Manchester) gave valuable insights into the life of a computing student and the pre lunch session was brought to a close by Paul Curzon of Queen Mary, University of London and CS4FN. He talked about the relationship between 'locked in syndrome', whose sufferers have extreme difficulty in communicating (perhaps only being able to blink) and computer science. On the way Paul looked at compression, coding, encryption, and many other aspects of computing.

After lunch Chris Child (City University and game design company Childish Things) showed how to go about designing and developing a computer game commercially. Chris made the point that starting game development while still at school is highly feasible. Alex Dobinson, a student at St Ambrose College gave a very impressive talk on his research into Artificial Intelligence and his application of AI to games. A poster competition, sponsored by the Open University, was held with students from Burnage Media Arts College taking the prizes.

The event culminated with a talk from Professor Steve Furber entitled "Building Brains." This provided a fascinating insight into the history of computing, Prof. Furber's own history in computing and the implications for the future directions of research in computer engineering. These new directions include using massively parallel computers configured as biological systems. An inspirational session giving delegates a lot to think about on the way home and hopefully for the rest of their careers. The day was very well received and generated plenty of questions and discussion. Many thanks to the School of Computer Science at The University of Manchester for their provision of excellent facilities and support.   *Adrian Jackson*

Peter Dickman, (Google) speaks at another CAS student conference, held at Cockermouth School, Cumbria. Over 160 participated in activities lead by academics and representatives from the computing industry. 'Awesome' was the verdict of the excited students.

CAS GOOGLE GROUP: A COLLECTIVE RESOURCE

The Computing At School group is growing. Members are linked together through our Google Group. The site is a wiki. In other words, all members can add and edit the contents.

There are 3 subsections 'behind' the home page; discussions, files (a space to upload documents or files to share) and pages. In the latter category is a page entitled 'Resources Supporting Curricula Development' - a growing list of links to resources tried and tested by CAS members. Each link has a brief description, suggested age range and space for colleagues to post comments.

A wealth of material exists that can assist time pressed teachers at all levels, particularly A level. CAS members are using the wiki page to share links with each other. Already nearly 200 links have been posted by CAS supporters. Many hands make light work. If you are a member of CAS and know of a 'gem', please add it to the list. And if you're not already a member, it's surely one more good reason to get involved.
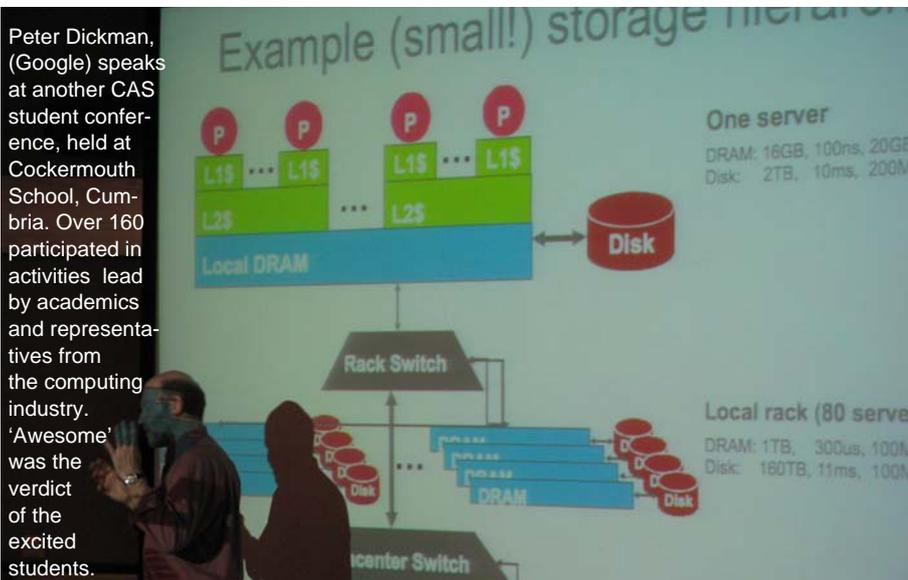
INFORMATICS OLYMPIAD

The British Informatics Olympiad, the annual programming competition for schools and colleges, now in its 16th year starts in November. The first round of the BIO is a three hour programming challenge. The finalists then meet for a further round at Easter and the winners go on to represent Britain in the International Olympiad for Informatics. Keep an eye on the competition website for details of how to register.

USING JAVASCRIPT TO GET COMPUTING INTO KS3 ICT

All schools currently have to teach the national curriculum and ICT is a statutory requirement. Many ICT teachers have little experience of computing. Complete beginners start ICT at a young age by using generic applications eg making simple presentations. Sadly this can be repeated many times with only marginal improvements in technological skills or understanding as they progress through secondary school.

Since schools are expected to provide pupil e-portfolios, learning how to develop web based information systems is a real opportunity. Simple to do at a trivial level with word processor style editors such as CK Editor but with scope for programming and higher order competence for more sophisticated applications. Using Cloud applications there is nothing to install, no software to buy and learners can access the same resources at home. In short it is inclusive and relevant to learner experiences of ICT outside school.

Technical knowledge and understanding can be built progressively from using a basic editor in primary school through HTML tagging to JavaScript. To apply a heading style to text in CK Editor, click a button and there it is, displayed as <h1>text</h1>. Any teacher can learn that alongside their pupils so we can up-skill the teachers at the same time. There are masses of free HTML and JavaScript tutorials on the web. JavaScript is an object based language so projects can vary from simple interactive web page effects to fully functional applications. It therefore offers a progression route for learners and teachers supported by free resources. There are no installation barriers or specific operating system requirements.

With this in mind Ingots, as part of an EU lifelong learning project are producing Open Source JavaScript examples that learners can study, improve and adapt. Pupils can study working interactive puzzles, take the code, modify and improve it or adapt it to their own needs. Links to the puzzles can be found in the web supplement. It's still a work in progress and anyone is welcome to join in. *Ian Lynch*

SHARING YOUR GREENFOOT IDEAS IN THE GREENROOM

A new, vibrant place for teachers to talk, support each other, share material and ask questions has recently been opened. The Greenroom offers a model through which colleagues can learn together.

The Greenroom is an online community for teachers who teach with (or are interested in teaching with) the Greenfoot system. Greenfoot is a visual programming environment for beginners aged 14 and upwards that allows interactive games and simulations to be programmed using Java. It is specifically targeted at those learning to program, and engages learners quickly with interesting activities, allowing newcomers to write an interactive game on their first day. However, one of the difficulties in switching to a new teaching tool, such as Greenfoot, is the challenge of developing enough material to last an entire term. This problem is shared by all teachers wanting to use Greenfoot. Yet traditionally, each teacher will solve this problem separately, duplicating effort by creating their own resources to be used only in their classroom. The Greenroom was created to help with this challenge.

It is a community site that lets teachers share examples, worksheets, slides and videos that they have created. This helps to get started with Greenfoot by giving access to a many resources straight away. It also prevents teachers' hard work in creating activities from being wasted, by allowing them to share their created material with their peers. The Greenroom encourages collaboration: teachers may upload resources to the Greenroom, and others are then free to contribute to them. So there need be no worry about polishing a resource to perfection before uploading, as others can help you improve the material -- and if you don't have anything yourself, you can equally contribute to others' work.

The Greenroom is teachers-only (we check when you sign up), so answers can be shared alongside worksheets. There are discussion forums for issues related to teaching programming with Greenfoot. It already has hundreds of members, from both inside and outside of the UK, and over fifty resources. While only instructors are allowed in the Greenroom, your pupils also have a place to go to. They may be interested in the Greenfoot Gallery which allows them to upload their Greenfoot scenarios to the web and easily share them with their friends and family. Further details in the web supplement. *Neil Brown*

ESSENTIAL MATERIAL FOR GCSE COMPUTING

The sample scheme of work in the support materials for the new OCR GCSE suggests using some of the material from Hi Tech Trek—the RI Xmas Lectures 2008 presented by Professor Chris Bishop. Remember, you can order a copy of all the lectures on DVD, free from CAS. An invaluable resource to use in your classroom with a great supporting website. Details of how to order are on the CAS website.
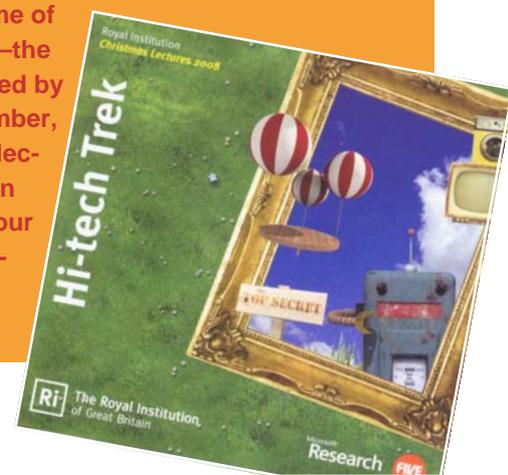
FORGING COMPUTING LINKS BETWEEN KEY STAGES 2 AND 3

David Kinsella reports on the success of an initiative introduced by Nelson Thomlinson School in Wigton, Cumbria. Secondary ICT teachers visit local primary schools introducing pupils to stimulating computing activities using Scratch and Unplugged.

Traditionally, as a Maths and Computing specialist school, member of the ICT department went into primary schools and delivered 9, 1hour sessions on an aspect of ICT that the primary schools would not normally deliver. We decided that we were going to deliver 5 lessons using the principles of Computer Science Unplugged (see back page) and 4 lessons of Scratch where we would develop a simple game, using the theoretical skills from the Unplugged sessions and applying them to Scratch. This gave us the opportunity to be able to go back over key ideas and constructs and re-iterate them to the students having more difficulties

Whilst an argument might well be that we are teaching computing and not ICT, our department is staffed by ex-programmers, each with different backgrounds. We decided to refer to neither term to avoid confusing students or worry primary staff unfamiliar with computing. The children excitedly told their teachers about what they were doing and as a result, staff have come and helped in the activities.

The children are far more interested about the ideas than we ever thought and untroubled about not using computers in some lessons. We aim to deliver inset to primary staff to get them more involved and hopefully, deliver extra sessions themselves.

The kids love it. They enjoy the kinaesthetic experience and can run around doing crazy stuff that they think have nothing to do with computing / ICT. But when it's explained to them, or more importantly, they work it out for themselves, you can literally see lights go on in their heads. They start to try and apply concepts anywhere and everywhere they can. They don't always do it correctly , or apply them to appropriate situations they are trying and developing new thinking skills along the way.

We carry this on during Year 6 induction day, where we take a much larger group of students and do some more unplugged activities. It seems to be a session that they remember. We use Scratch in Year 7 and we are starting to get pupils creating projects in their own time, bringing us their work on induction day and proudly showing what they have done. We will be monitoring this much more carefully over the next year to see what impact this makes to progress in year 7.

David Kinsella

COMPUTING: MORE THAN JUST PROGRAMMING

Computing is a rich discipline, like mathematics or physics, that explores foundational principles and ideas. It has many sub-fields, ranging from computation to human computer interaction (which focuses on making computers and computations useful). It is not ICT, important though those skills are. Neither is it simply programming, though this is an essential element of it. CS4FN and CS Unplugged have developed many exciting classroom activities to illuminate some of these principles. In fact they don't even need a computer, but use engaging kinaesthetic approaches. Do your kids a favour—get unplugged from time to time! The next issue of SWITCHEDON will look at Computer Science Inside, another marvellous set of resources developed in a similar vein at Glasgow University.

VITAL ANNOUNCES NEW DEVELOPMENTS

The Vital programme, a sponsor of CAS, has teamed up with Elluminate *Live!* to create new online events called TeachShares. Elluminate's video and audio conferencing system lets users talk with other people while sharing a whiteboard and their own screen. In the half-hour sessions a practitioner gives a 15-minute presentation then answers questions on the broader subject.

"Collaboration between practitioners is central to the Vital programme, and TeachShares offer a great opportunity to do this," said Vital Programme Director Peter Twining. "You don't need expensive video conferencing equipment and can save on travel time and costs. Sessions are recorded so those who can't make the live event can review it independently at a time that suits them."

"We are delighted to be partnering with Elluminate *Live!* and hope to see teachers take advantage of it over the coming months."

Each TeachShare is on a different subject. They currently take place at 4pm every Monday and are open to anyone who has registered for the Vital programme. Registration for the programme is free. The Vital website also has a range of CPD and other resources to help teachers use ICT to inspire their students and pupils. Registration details and further information are in the web supplement.

Emma Blackburn

CAS members have created introductory courses on using Alice and Scratch and work is in progress to get them on to the Vital website. If you have suggestions for Vital courses you feel would be valuable for developing staff competence in teaching Computing please let Simon Humphreys at CAS know.

A PAUSE FOR THOUGHT

Four friends need to cross a bridge. They start on the same side of the bridge. A maximum of two people can cross at any time. It is night and they have just one lamp. People that cross the bridge must carry the lamp to see the way. A pair must walk together at the rate of the slower person:

Rachel takes 1 minute to cross
Ben takes 2 minutes to cross
George takes 7 minutes to cross
Yvonne takes 10 minutes to cross

The fastest time takes 17 minutes. Can you work out how it is done?

This problem comes from the NRICH website—a joint project between the faculties of Mathematics and Education at the University of Cambridge. A free and extensive resource bank, with many articles, activities and problems for pupils from KS1 to 5. Although focusing on maths, lots of the activities are applicable in computing lessons, focusing on algorithms, logic and problem solving. Links to the answer, supporting applet and suggestions for pupil investigations in the web supplement.

TEACH COMPUTING WITHOUT PC'S!

Download Book

There is a lot more to computing than programming. Computer Science Unplugged is a series of learning activities that reveals a little known secret: Computer Science isn't really about pc's at all!

Computer Science Unplugged provides an extensive collection of free resources that teach principles of Computer Science such as binary numbers, algorithms and data compression through engaging games and puzzles that use cards, string, crayons and lots of running around. CS Unplugged is suitable for people of all ages, from primary school to A Level and has been used around the world for over fifteen years. You can

download a teachers' version of the collection which also explains the computing concepts behind the exercises. Computer Science obviously involves computers sometimes, and many exercises lead on to doing activities on computers, but the Unplugged approach is a great way to get students thinking about computing before they get distracted by the technical diversions that can inhibit thinking while at the computer.
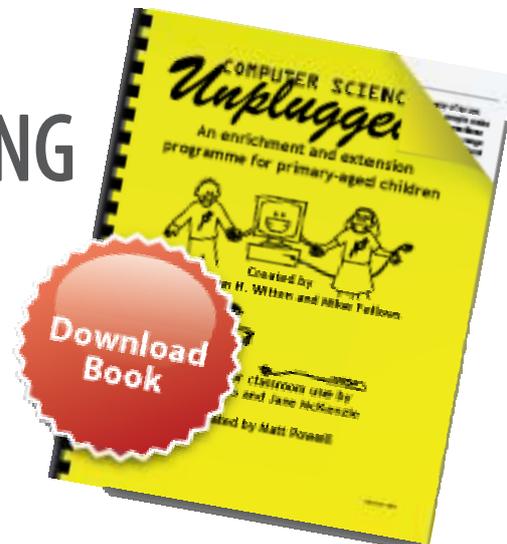
SOUTHAMPTON UNIVERSITY CIPHER CHALLENGE

The National Cipher Challenge is an annual cryptographic competition, organised by Southampton University School of Mathematics. Competitors attempt to break cryptograms (a series of timed challenges of increasing difficulty) published on the website. Now in it's 9th year, it attracts a wide entry from schools and colleges. The many sponsors provide a host of prizes, a prize-giving dinner being held at Bletchley Park. The new competition starts on the 7th October and you can register free via the website (details in the supplement) from 14th September.

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Computing at School was born out of our excitement with the discipline, combined with a serious concern that students are being turned off computing by a combination of factors. **SWITCHEDON** is published each term. We welcome comments, suggestions and items for inclusion in future issues. Our goal is to put the fun back into computing at school. Will you help us?

Please send contributions to **newsletter@computingatschool.co.uk**

Many thanks to the following for help and information in this issue: *Jonathan Black, Emma Blackburn, Wendy Bowe, Neil Brown, Claire Davenport, Roger Davies, Lyndsay Hope, Toby Howard, Simon Humphreys, Adrian Jackson, David Kinsella, Ian Lynch, Graham MacLeod, Simon Peyton-Jones, John Stout.*

SWITCHEDON WEB SUPPLEMENT: LINKS & EXTRA INFORMATION
www.computingatschool.org.uk / newsletter

HELP SPREAD THE WORD

If you like what you have read in **SWITCHEDON** please tell your colleagues and help spread the CAS message wider. If you organise or attend meetings where this newsletter could be distributed (for example, exam board meetings or local authority gatherings) please get in touch and we will happily send multiple copies.

CAS is made up of enthusiasts passionate about their subject. It's only strength is it's members. If you share our aims, join us. You'll find a welcoming community of like minds.