Our Summer Term edition is once again led by Miles Berry, Professor of Computing Education at the University of Roehampton, with Sam P of the South West Regional Crime Unit adding an article on cyber security.

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SAPIENTIA

From ICT for Education

# Everything you need to know about Computing, the curriculum, and the classroom.

Welcome to the summer term edition of Sapientia, ICT for Education's exclusive newsletter that provides education professionals with thought leadership, an insight into hot topics, and practical guidance on how to implement new technologies and techniques to improve teaching and learning.

This edition includes a review of creativity in computing, and a deep dive into cybercrime in the education sector and how to stay safe.

Miles Berry, Professor of Computing Education at the University of Roehampton, discusses his concerns about a lack of creativity in most computing lessons and the negative impact this has on pupils' engagement with the subject.

Looking at aspects of creativity that could be deployed, Berry suggests pupils should make something specific, strive for excellence, deliver original work, and learn by joining creative and collaborative communities such as Scratch. The outcome? Hopefully, more interest in computing.

Also, in this issue of Sapientia, Sam P, Cyber Protect, Prepare & Prevent Officer at a Regional Cyber Crime Unit, outlines an increase in cyber-attacks in the education sector across the UK. Investigations suggest basic measures in schools would prevent many incidents from occurring, with preventions including strong and unique passwords, solid backup procedures, multi-factor authentication, frequent hardware and software updates, staff training and incident response plans.

Among organisations helping schools to prevent and manage cybercrime, Sam P notes the Cyber Protect network, local police forces, Regional Organised Crime Groups, Cyber Resilience Centres, and the Cyber Choices programme created to help young people make informed choices about how they use their cyber skills.

To keep pace with the changes, challenges and opportunities in the primary and secondary education sectors, register for ICT for Education's termly newsletter here or e.mail il@ictforeducation.co.uk. And don't miss our live ICT for Education events, where you can listen to expert speakers, including Miles Berry and Tig Williams and network with colleagues. **Click here** to find out more and register for upcoming ICT for Education events.

Sarah Underwood Editor - ICT for Education

# Creativity in computing

*By Professor Miles Berry, Professor of Computing Education at the University of Roehampton.*

The Royal Society's Science Education Tracker suggests a decline in pupils' interest in computing during secondary school, with 68% finding it interesting in Year 7, down to 35% by Year 11. Primary school is likely to be more positive, but it's

harder to get data. This comes down to both curriculum and pedagogy: what we teach and how we teach it.

The current national curriculum starts with the ambition that a high-quality computing education equips pupils with computational thinking and creativity to understand and change the world. There's been plenty of focus on teaching the concepts of computational thinking, but not nearly enough practical programming in secondary schools for most pupils to start thinking computationally, in the sense of looking for automatable solutions to interesting problems.

I'm concerned by how little creativity there seems to be in most computing lessons, and the negative impact that has on pupils' engagement with the subject and their learning. In part, this is because of how dull GCSE computer science specifications are, and the knock-on effect that this has on the content and approach for Key Stage 3. I'm lobbying that we replace GCSE computer science with a new GCSE covering the whole breadth of computing, including creative work in digital media, and add in robust, practical assessment as happens in other creative subjects.

Given how good generative AI is at writing code and producing digital media, it's worth pausing to think about what computing education should be for. The way we use digital technologies has already changed, with many of us finding that these tools have become more useful, and that our use of them is now focussed on ideas, design, feedback and iteration. Our ability to make code and media is now about inspiration, ideas and creativity rather than our mastery of technical skills.

Mastery of technical skills was never a sufficient condition for creative work, but until quite recently it's been a necessary one. Many of us will continue to find enjoyment, and even employment, in

creative digital work, using our own inspiration and experience to make better use of emerging technologies. Take chess as an example: computers are better than humans at chess, but humans still play chess, and humans get better at chess through using computers.

Much of the pioneering work of teaching pupils computing was done by Seymour Papert and his colleagues. Papert took Piaget's idea of constructivism, that pupils learn through play, experiment and experience, and developed the theory of constructionism, recognising that learning happened especially felicitously when pupils were consciously engaged in making something to show to others. Learners didn't just show their learning through making, it was through making that learning happened. Mitch Resnick, the creator of Scratch, puts it well: 'make something in the world to make something in your head'.

We know this for ourselves as educators: it's through writing lesson plans and creating resources that we come to understand our subject and how our pupils learn. The work young people do in Resnick's Scratch is such a great example of Papert's constructionism, where young people discover the big ideas of computing for themselves by looking at others' projects, adapting these, and then making their own animations, puzzles or games.

There are, I think, a number of aspects to creativity, within and beyond the computing classroom.

First, there has to be some creation: pupils should actually make something. While there are good arguments for PRIMM (predict, run, investigate, modify, make) as an approach to teaching programming, I'm concerned that the last M, make, is silent and often invisible: resources and lesson time focus too much on the first four stages at the expense of the last.

Creativity should also be about quality. It's fine that the first attempt isn't great, the creative process typically requires that the artist or engineer should not be satisfied with that and should go on to debug, learn from mistakes and iterate. There should be a striving for excellence, or at least for the best that's possible with the time and resources available.

Originality is fundamental. The work really does have to be the pupil's own, although it can take inspiration from and pay homage to the work of other creators, again, look at the Scratch community for examples. It's harder to see what originality means in the context of generative AI, but originality doesn't have to mean doing all the work yourself. We demand that our students' essays be their own work, but we also allow them to use generative AI as long as that's acknowledged.

Creativity demands fluency with the tools used. It starts with craftsmanship, but it doesn't end there. Bill Liao, founder of Coder Dojo, talked about 'coder poets', young people who become so fluent in the language of programming that they can use this as a medium for personal, creative expression. For this to happen, I think the focus should be on becoming fluent in one or two languages, rather than having experience of many. It's hard to do better than Scratch in primary and Python in secondary. Beyond coding, digital media work demands familiarity with the digital tools, and I'd now include generative AI here. Again, it's better to master a few tools than to have experience of many.

My final aspect of creativity is about community. Little creative work takes place in isolation, but rather through joining in with a creative community. Scratch, once again, offers a great example of this, as does Github for older programmers, but so

too do many classrooms, at least potentially. Compare your way of working to that of your colleagues teaching other creative subjects: do you see more collaboration and communication in their classes than in your own? You can, if you wish, change this: I think your pupils might thank you for it, and perhaps love computing just a little bit more?

**Professor Miles Berry**

*Miles Berry is Professor of Computing Education at the University of Roehampton. Before joining Roehampton, he spent 18 years in schools, including a period as a head teacher. He has contributed to a wide range of computing projects, including the computing programmes of study in the National Curriculum, Barefoot Computing and Switched On Computing. He serves on the boards of Computing At School, the BCS Academy of Computing, and the National Centre for Computing Education, and is a regular keynote speaker and international consultant on curriculum and professional development. He is @mberry on Twitter and find out more on milesberry.net*

**Hear Miles speak at ICT for Education Conferences in Newcastle (September 19th) and Salford (October 9th)**

# Cybercrime and the Education sector - what you need to know

*By Sam P, Cyber Protect, Prepare & Prevent Officer, Regional Cyber Crime Unit*

In recent years, there has been an increase in cyber-attacks on the education sector across the UK. The government's Cyber Security Breaches Survey 2025 revealed that cyber security breaches or attacks in the past 12 months were high among secondary schools (60%), further education colleges (85%), and higher education institutions (91%). Along with primary schools (44%), they were all more likely to experience a breach or attack than businesses overall. Figures from the Information Commissioner's Office (ICO) show 1,714 cyber incidents were reported in the education and childcare sector in 2024.


Law enforcement has also seen a rise in cybercrime incidents affecting educational organisations to varying degrees. Perpetrators range from students disrupting school networks to

organised criminal groups stealing sensitive data and extorting institutions for financial gain.

Despite the increasing sophistication of certain actors, through the course of our investigations we commonly find that basic measures would have prevented many incidents from occurring. These include preventions such as strong and unique passwords, solid backup procedures, multi-factor authentication, frequent hardware and software updates, and staff training to help recognise phishing attempts. We also find that many schools do not have adequate incident response plans in place, let alone tested.

## How the Cyber Protect network can help

The Cyber Protect network leads the law enforcement response to protect the public from being targeted in a cyber-attack and empowers individuals and organisations to protect themselves. There are staff across each local police force and Regional Organised Crime Group (ROCU) in the UK that offer consistent advice and guidance through a variety of free services such as presentations and cyber exercising. We can help educate staff around good cyber hygiene, preparing for and responding to incidents (including working with law enforcement), or we can offer more bespoke guidance if you have specific areas of concern. If you would like to know more about how we can help you stay protected against cybercrime, please email swcyberprotect@avonandsomerset.police.uk

The network also encompasses Cyber Resilience Centres, not-for-profit organisations funded by the Home Office and policing that can offer affordable technical services such as vulnerability assessments. More information can be found on their website.

## Cyber Choices

The Cyber Choices programme was created to help primarily young people make informed choices and use their cyber skills in a legal way. This is a national programme coordinated by the National Crime Agency and delivered by Cyber Choices teams within Regional Organised Crime Units and Local Police Force Cyber Teams. The aims of the programme are to:

- Explain the difference between legal and illegal cyber activity
- Encourage individuals to make informed choices in their use of technology
- Increase awareness of the Computer Misuse Act 1990
- Promote positive, legal cyber opportunities

If you would like more information about the team in the South West, please email swcyberprevent@avonandsomerset.police.uk

## How to report a cyber attack

If you are suffering a live cyber-attack, please call Action Fraud on 0300 123 2040 immediately. The service is available 24 hours a day, 7 days a week. A live attack is one that is ongoing, that is still affecting your system and your ability to work, and there is an opportunity for law enforcement to stop the attack and/or secure evidence that will assist an investigation.

You can also report fraud or cybercrime to Action Fraud any time of the day or night using its online reporting tool, and by calling 0300 123 2040, Monday to Friday from 8am to 8pm.

## NCSC Cyber Security for Schools

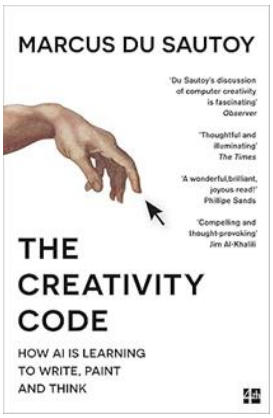
The National Cyber Security Centre is the UK's national technical authority for cyber threats and information assurance. It has a section on its

website dedicated to schools that we highly recommend.

# Further reading


**Miles Berry,** Professor of Computing Education at the University of Roehampton recommends

**Groß, B et al (2018) Generative Design: Visualize, Program, and Create with JavaScript in p5.js, Princeton Architectural Press**




p5.js is an online, interactive coding environment for producing gorgeous digital art. It captures Resnick's vision of low floors, wide walls and high ceilings, and is a great way to connect coding with more engaging, creative work.

**du Sautoy, M (2019) The Creativity Code: How AI is learning to write, paint and think, Fourth Estate.**

Oxford mathematician Marcus du Sautoy discusses how AI can do what we might think of as creative work, including in his own field. This predates the rapid advances we've seen in generative AI, but the accessible approach means this is still a top recommendation.

# Learn, Share, Enjoy

ICT for Education can help you get the most out of technology in your classroom and in your school. Our free to attend conferences and seminars provide relevant, innovative, informative content delivered by experienced, knowledgeable, respected speakers able to relate to and understand the challenges faced by those responsible for giving learners the best opportunities in life.

## Attend a Conference

Newcastle - 19/09/25

Salford - 09/10/25

Birmingham - 07/11/25

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