Advancing Education

Summer 2015 Edition

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About Advancing Education

Advancing Education' is a leading journal comprised of an eclectic mix of academic and action research papers and reports from members and sponsoring partners on innovative uses of ICT in education and beyond. As such it reflects the wide ranging interests of members and sponsors and all those passionate about ICT in all phases of education. The journal is published online up to three times a year.

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Summer 2015 Edition

In this edition of Advancing Education we bring you a somewhat eclectic mix of articles. Bob Harrison's offers his views on the development of ETAG and also on the curriculum asking Why is ICT teaching "dull and boring". We also bring you an interesting use of board games at Shaw Wood Academy where they are used to support teaching of the fundamentals of coding together with an in depth evaluation of use of the Show My Homework online homework package by Dr Christina Preston and colleagues. This reveals that simple, focused use of technology can really enhance and coordinate practice across a school – well worth a read. In addition we have a fascinating piece from Keiron Sparrowhawk of MyCognition demonstrating the role of his innovative tools for cognitive assessment and training for SEN pupils.

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Editorial Ramblings

Author: Paul Heinrich

In which your editor muses on the impact of the election outcome, school recruitment and staffing issues and the future of ICT/Computing resources and investment.

The recent general election has, regardless of how you felt about the outcome, ensured that there will be some stability in education policy for at least the next five years. Thus we can look forward to ongoing implementation of the Govian curriculum, a radically different exam system and draconian testing in primary schools. But as a result a new age of learning will sweep over the system; expectations, however unrealistic, will be raised and a revived spirit of aspiration will ensure that all pupils make above average progress. And England will win the Ashes . . .!

For schools and teachers the ongoing roll-out of these policies provides perhaps the greatest challenges seen in 30 years. Far greater than those of the introduction of GCSE, the original national curriculum and even of the coming of OFSTED and all at a time when the teaching workforce is possibly more demoralised than it has ever been. Retired teachers of my acquaintance are thankful to be out of the system and those near retirement age cannot wait to get out. At the other end of the career spectrum many new recruits either never enter the classroom after graduation while 40% leave within their first years. I doubt that headteachers criticising the quality of new recruits as was recently reported will have a positive impact on recruitment, though since any teacher today can expect to have their performance criticised by everyone from the Secretary of State downwards they might as well get used to it. The floggings will indeed continue until morale improves!

Schools are heading for a recruitment crisis, one that will get worse as the economy improves and private sector pay and job security forge ahead. We already know about the difficulties in attracting good Maths and English teachers but what about staff for ICT/Computing? Not so long ago ICT jobs were few and far between yet at the time of writing there are 170 Computing/ICT secondary school posts advertised in the TES of which 26 are for HoDs. Given that other jobs will be advertised only on local authority websites or within academy chains there are possibly as many as 200 positions available at the present time.

However, while the jobs are there are the candidates, or at least those with the technical and subject knowledge needed to teach the CS and coding aspects of the curriculum as well as good teaching skills? While this is the

peak time for vacancies to be advertised it will be interesting to see how many are still there in the autumn. And how many of these new teachers will stay the course?

One of the issues with ICT has always been the lack of expertise amongst those teaching it – not the few well-trained and qualified teachers but the many who were simply drafted into the role, regardless of their subject knowledge, by SMTs keen to fill timetables. That this resulted in low expectations and even lower attainment, aided and abetted by certain certificated courses should have been no surprise. It was not the old ICT curriculum that failed per se, it was the fact that it was not taught well or in full that led to poor standards and hence ministerial criticism. The same will happen with Computing if there are insufficient and well trained teachers, whether CS experts or properly retrained existing teachers of ICT. Perhaps schools have been set up to fail as are about a third of pupils in primary schools once the new 'more rigorous' SATs regime comes in. Interesting times.

Regardless of staffing is the new curriculum working? As Bob Harrison reminds us the PoS contain areas that are related to the broader and creative use of technology. They are not just about coding though this is regarded by some as the be all and end all of Computing. Indeed, will the new PoS and CS exams actually provide a workforce with the necessary creative digital skills needed by industry. Even in the big tech companies those employees needing coding and programming skills is relatively small. Fortunately wide discussion continues, not least within Naace but also within ETAG (Education Technology in Action Group) which has government backing and so good credibility within the department. There exists the potential for a more holistic approach to the whole ICT/Computing/CS curriculum that ensures that we actually teach what is needed to properly prepare pupils for the workplace of tomorrow.

There is a further issue lurking in the background, that of resource provision. When it is clear that real value of school funding will decline over the next five years what priority will be given to ICT resources and infrastructure? The BESA ICT in UK Schools survey for 2014 suggests that while (on average) 20% of schools will invest more than expected in ICT others, especially primary schools are significantly downgrading their planned investments though overall about half of all schools expect to at least maintain investment. However, the key story lies in the massive under resourcing in several key areas:

- Wireless networking – 60% under-resourced
- Tablet provision – 73% under-resourced
- Computer access for pupils – 52% have poor access
- Teacher training in tablet use – 50% of teachers require training
- Bandwidth – 30% require improvement

Not only are good resources essential if the Computing curriculum is to be taught effectively but ICT can only be an integral part of learning and teaching

if the tools are there. Schools not only need to maintain their level of investment but to dramatically increase it or the issues identified above will only get worse. Somehow that message needs to get through to government.

And so to this issue of Advancing Education, albeit one rather slimmer than anticipated (well, it is the age of austerity I suppose!) so come on Naace members, there must be exciting things going on in your schools and elsewhere that deserve a wider audience. Bob Harrison's contributions on the curriculum and ETAG have already been mentioned. We also bring you an interesting use of board games at Shaw Wood Academy where they are used to support teaching of the fundamentals of coding together with an in depth evaluation of use of the Show My Homework online homework package by Dr Christina Preston and colleagues. This reveals that simple, focused use of technology can really enhance and coordinate practice across a school – well worth a read. In addition we have a fascinating piece from Keiron Sparrowhawk of MyCognition demonstrating the role of his innovative tools for cognitive assessment and training for SEN pupils.

Finally, as the summer break approaches there will be time for teachers and those supporting schools to review and evaluate the first year of the Computing curriculum. Do let us have your thoughts for the Autumn issue.

Paul Heinrich
Editor

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All opinions expressed in this editorial are those of the author and do not necessarily reflect Naace policy.

Board of Computing?

Author: Paddy Carroll, Shaw Wood Academy, Doncaster

Can board games help teach an understanding of the fundamentals of programming? This approach is certainly making a difference at Shaw Wood Academy

So the coding revolution is in full swing and I have to admit that I have been pleasantly surprised by the range of resources that have been created for the new curriculum. Initially, naively and presumptuously, I had visions of tedious lessons that droned on in dull monotonous measures and that were primarily designed for tiresome teachers who wanted an easy life of ticking boxes rather than expanding minds. However, instead of that forlorn fallacy we have been littered with a wealth of resources to enable us to extend and excite learners of all ages. From the imaginative, collaborative websites such as Code Kingdoms, Eraseallkittens and Code Hunt to the Dot, Dash and Sphero devices that race up and down classrooms or the flying machines that do anything but drone on and on. I am delighted to say that we have an abundance of engaging tools. Before you shout at the text, yes there are even more devices, schemes, materials that I could mention that you use but this only reiterates why we should applaud those who have put what the children need before what an uninspired teacher wants.

Sometimes though, teachers such as myself use the term uninspired about staff when actually the issue is more to do with confidence rather than ambition. More to do with us racing ahead instead of establishing a more structured pace for colleagues. They do want to understand, they do want to engage, but they struggle because change is so constant yet so inconsistent. This is one of the reasons why we decided to slow down the technology race and instead introduce board games to the curriculum.

Board games and computing might not seem like a natural step to begin with, yet a number of games have been developed recently due to these links being more obvious than first imagined. Games such as Code Monkey Island, Bits and Bytes as well as Robot Turtles have been specially designed so that children use coding language and logic through the familiar cooperative yet combative format that many of us started playing at a very young age. Fundamental features of programming such as instructing, looping and sequencing have all been specifically planned into these games so that the children tackle challenges and obstacles just like that would do if it was on the computer. Being board games, the understanding of variables and recognition of consequences through actions are also clearly prevalent and so again core-computing concepts are being emphasized.

Within other curriculum subjects, we have looked to use board and card games to help establish links between them and computing so that the children recognize these important cross-curricular connections. A good

example of this can be seen through the game Swish. We use Swish and Swish Jr in maths as they are spatial card games that challenge the children to identify matches between the patterns that are on the transparent cards by rotating the cards to fit together. Swishes can be made by stacking as few as two cards together or as many as 12. By encouraging the children to problem solve in this way, they are investigating logical reasoning and using sequencing and ordering to establish patterns.

Similarly, with the game Kloo, children are also given the courage to be curious. After selecting a series of cards, they then put these cards into a colour sequence by following the arrows on the cards to make grammatically clear sentences quickly and easily. This works as each colour card represents a specific word class, meaning that there are thousands of sentences to create by altering the order of the cards. The English version works very well in Reception and Year 1, however it is when the older children get to use the French version where things get really interesting. They have to follow the same principle, but then obviously they need to translate the sentence that they create. To do this, they have to use the other cards in the pack they need to decode the message and this can be highly entertaining.

So how has this helped staff? Well, staff, including teachers and HLTAs as well as TAs have used these games with small groups and by doing so they have introduced themselves and the children to computing language and concepts in a much less intimidating environment. It has been through a less obvious route but it is just as focused and challenging. By establishing the cross-curricular exchanges we are covering and revisiting more of the curriculum so that everyone involved becomes increasingly confident and aware of the language, progression and purpose. Also, we haven't yet had the complaint that the board game is offline or has an error which always makes my life easier.

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Homework Matters: A qualitative evaluation of the role of technology in enhancing student outcomes and promoting learning outside of the classroom

Author: Dr Christina Preston, Fiona Langan, Naimish Gohil & Louise Raw

This study focuses on the online homework package, Show my Homework (SMHW) designed by assistant headteacher, Naimish Gohil, who has experience of the traditional methods of setting and collecting homework in school.

About Show My Homework

As an assistant headteacher at two schools, Naimish Gohil had a strong background in ICT; he was searching the market for a simple and effective solution for his school and homework. Aware that the solutions needed to suit the school and more importantly the teachers, he was astonished at the complexity of the solutions that existed. The service was often hidden in a complex Virtual Learning Environment (VLE) that teachers and pupils found difficult to use.

Show My Homework is a centralised resource where all the information on homework can be found. The product is designed to consolidate homework across a school. The task, assignment details, resources, timing and deadlines are clearly displayed to pupils, parents and other teachers. This makes stakeholders fully accountable for homework. Key features are:

- The product is intuitive and simple to use requiring minimal training;
- All the stakeholders have a view of what is required and when;
- No information is lost in the scramble at the end of the class to take down the homework in their note books;
- There are no excuses for not knowing when the assignment was due;
- Teachers can supply digital assets to facilitate the tasks;
- The school now has a view of homework across all age groups and can report on its usage;

- Teachers have the ability to re-use homework and peruse other examples from all the users of SMHW.

This research and development study

This research and development project was designed in association with the MirandaNet Fellowship, founded in 1992. This professional organisation with nearly 1,000 educators in 80 countries has an international reputation for researching the value of technologies in improving teaching and learning and changing practice. Fellows outlined the problems of conventional methods in a debate about homework: too much time is spent not in setting up the homework itself, but in rectifying miscommunication, retrieving lost papers, following up with pupils and parents when it is not completed and, of course, the marking. Homework can also be stressful for pupils, parents and teachers, either when the task is not clear or when homework tasks have been left at school or lost on the way home. The premise of this study was also that better homework strategies can be developed online as a means of involving parents and carers in their children's learning.

Research methods

In the first stage the MirandaNet team analysed the results of more than twenty case studies undertaken by the team since they began developing SMHW. The research team used this exercise to decide what research questions should be asked in the second stage of the research.

The researchers were looking for:

- evidence of improved behaviour and more independent learning and better home/school relations
- differences in teaching approaches
- signs of SMHW embedded into the practice and policy of the stakeholders
- other practices that could be adopted
- suggestions for improving SMHW
- CPD activities that might help schools to integrate SMHW in their practice

The researchers were also expecting to find hints and tips about installation and practice to share with other teachers.

A questionnaire was sent to the senior manager in charge of the homework project in one school as well as three teachers, three parents and five students. In-depth interviews were then held with each group. Finally these stakeholders came together in a focus group to share their perspectives on how far SMHW had contributed to a change in the attitudes to homework and the relevant practices.

The school

For this in-depth study in the second stage of the research, the SMHW team and the MirandaNet researchers selected Riddlesdown Collegiate in South East England as they had been active users over an academic year. Therefore, it would be possible to identify changes in practice and attitudes. Some important points can be observed in the ways in which the senior managers at Riddlesdown Collegiate secondary school ensured smooth adoption procedures for SMHW. In addition the stage was set for the embedding of SMHW into existing school systems.

Before the adoption of SMHWeach pupil at Riddlesdown Collegiate had a large paper homework planner designed specifically for the school. The school had recently abandoned a Virtual Learning Environment that teachers and pupils had found too complex and unwieldy to navigate so the senior manager, Fiona Langan, did not want to replace this with a digital tool that was equally cumbersome.

Fiona had seen SMHW at a conference and decided that this package had potential to improve the school's homework system. She kept the paper homework diary because it provided a good back-up: in addition some pupils might be more reluctant to change their practice than others. However she reduced the page size of the diary by a half. This provided a reduction in the cost of printing that could be offset against the subscription cost for SMHW. In addition, she met the challenge of the 5% of pupils who do not have an Internet connection in their homes: provision was made to do homework in an existing network room that would be open at all times and outside school hours.

When SMHW was installed Fiona had undertaken some of the staff training herself. The SMHW team have also been supplying trainers on technical and operational issues. New thinking was being focused on what kind of training should follow.

Discussion

In the first stage of the research encouraging comments from stakeholders emerged in the overall MirandaNet analysis of the data from twenty case studies.

In the twenty case studies, five themes emerged from the observations of the SMHW users where evidence of satisfaction was clear. Operationally the schools reported that SMHW was sufficiently simple and intuitive to engage all the stakeholders without much training. Saving in time and money through clear communication channels and shared digital resources were reported as a result of the resource management strategies. Evidence of clarity and consistency was exemplified in the reduction in confusion at home about homework setting and an improvement in homework submission rates. The schools valued the enrichment of their management and monitoring approaches and were able to use the statistics to report on performance

internally as well as to bodies such as OFSTED. In the most significant theme, new ways of learning, evidence emerged that indicated that the adoption of SMHW had made all the stakeholders feel more accountable for their role in making homework successful: teachers, parents and pupils. In addition parents were becoming more engaged in their children's education, an important factor in raising pupil achievement.
The findings from the second stage of the research must be judged in the context of a successful school where the senior management team had given time and thought to the installation of SMHW over more than a year. An analysis of the second interview data presented five themes that emerged from the interviews with the key stakeholders: one senior manager, three teachers, seven pupils and three parents.

In detail, the teachers were enthusiastic about the new teaching techniques that were available to them because of SMHW and they were not concerned that the homework tasks they set were now in the public realm. From their point of view there was much to learn in seeing what homework was being set not just in the school but also by all SMHW users. Both pupils and teachers found the storage of lesson plans, resources, hints and tips and revisions notes enhanced the learning opportunity and afforded the parents a better grasp of the task in hand. Teachers valued being able to track statistics for reports like OFSTED and were keen to have more analytical tools at their fingertips.

The younger pupils were articulate about the contribution that SMHW was making to their ability to learn independently. They were highly committed to the use of SMHW and were keen that teachers and parents should engage as widely as possible. More independent learning was evidenced by pupils' requests for more resources attached to the homework task, a self help forum for parents as well and the notion of building a school knowledge base where resources endorsed by the teachers could be stored over time. They also felt that operating this system well would be evidence of competence in job interviews and translate into their professional life as well. However, the sixth form who were not yet using the system fully were yet to judge the impact on their learning. Teachers pointed to evidence of improved independent learning mainly based on the fact that homework was handed in more regularly. Two teachers thought the homework was of a higher quality although this observation would need further investigation to be ratified.

The stakeholders were unanimous about improved relationships in the homework context. All the stakeholders reported that there had been improvement in the behavioural issues around homework. Pupils demonstrated more accountability by expressing a wish to find out what their homework was even if they could not be present when it was handed out. Pupils felt more accountable about homework as most of the grounds for excuses had been removed. Key reasons for the dissipation of the 'excuses' culture was the reliability of provision of online tasks and resources for children who had not been in class when the homework was given out or had left the diary at school or lost it. Children who were in hospital were also glad of the opportunity to keep up with their schoolwork. In particular, the pupils

appreciated the clarity and the parents appreciated being involved. They all agreed that bringing informed parents into the mix was a key factor in changing behaviour.

In the collaborative consultation all the stakeholders agreed that SMHW was embedded in the system. The signs were that all the stakeholders in the study now saw SMHW as an integral aspect of homework practice at the school and wished to keep the system and build on it. In addition, parents and pupils were keen that the teachers who were not yet using the system effectively should be encouraged to do so especially in the Sixth Form where use was not embedded. Only one suggestion was made to improve the current version but the stakeholders presented a variety of suggestions about what might be added by the company to enhance the users' experience. This engagement with innovation was also a sign that the stakeholders had ownership of SMHW and were able to make their own decisions about future trajectories.

One exception was found to the effective embedding in the school culture. The seven pupils were from 11 years to Sixth Form: the younger pupils were using SMHW far more than the Sixth Form who were slower to adopt as they were used to the paper system. All the stakeholders urged both the Sixth Form pupils and teachers were urged to start using the system more comprehensively because of the benefits.

The joint message sent to teachers about the suggested new procedures was an important indication that policy was being changed to accommodate what had been learnt. This message suggested how teachers could improve the process by more detailed entry of tasks and the attachment of lesson plans and resources as appropriate. In particular this was appreciated by those who could not attend school because of illness. The stakeholders were responsive to the need to change practice and policy as use became more sophisticated and more users became involved.

When discussions were held about professional development the consensus was that the initial skills training had been sufficient because the software design was simple and intuitive. However, teachers then talked about the need for a second stage of professional development that was not about the basics of use but better matched to some of the challenges that emerged as the stakeholders become more sophisticated users.
They favoured professional development in school about the guidelines for setting effective homework, issues of the provenance of online materials, digital citizenship issues, collecting data with value for teaching and learning and sharing their knowledge and skills with each other and with other members of the SMHW community.

It was clear as well that the teachers were learning about the power of digital technologies. It was suggested that there might be potential in professional development programmes to develop a knowledge bank as well as creating procedures to monitor the quality of homework, work on differentiation and further explore links with the data in SIMS about learning. Some of the teachers were already able to monitor others and lead an action research

professional development programme. In the action research approach the stakeholder decide the agenda, agree the questions, develop evidence collaboratively and share the results with other professionals.

Conclusion

This study focused on the online homework package, Show my Homework (SMHW) designed by an assistant headteacher to provide a solution to the inconsistency and inefficiency that occur when homework systems are not well organised in school. The fact that SMHW was designed to be as simple as possible was important because all the stakeholders, pupils, teachers and parents were able to become proficient quickly.

Amongst the benefits is that pupils and parents can see what homework they have to hand in and when. Most pupils enjoy seeing the clear plan of what homework is due when and recognise that this is helping them organise their time. Teachers say the work is handed in more regularly and the 'excuses' culture has largely dissipated.

Within a year the service has been embedded into the school culture and everyone interviewed wanted to extend the use of the online package. The detail in the report provides information about the issues that other schools should consider when they reach a higher level of maturity in the use of digital technologies. This research steeped in practice also indicates how a product can be further aligned with the needs of the stakeholder.
What emerges from the in-depth study of one school is that the provision of a well-designed product like SMHW can raise the confidence of the stakeholders in the value of online working across the school community. This is a catalyst to broader learning and a more positive conversation about school assignments in general.

But there is a bigger picture too that reflects the ways in which schools are coordinating their practice with the wider world. SMHW counts here as one of the innovations that underpins a revolution in teaching and learning by bringing learning at home and school together. The package encourages the teaching method of 'flipped learning', a version of independent learning where pupils find out about a topic for homework and bring their knowledge into the classroom for debate with their peers and their teacher.

Flipped learning is an example of how technology is contributing to changes in the school's learning culture to meet the needs of a world where technology is ubiquitous. So SMHWis not just valuable in the school context but as one of the tools that encourages exploration of innovation in education.

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Putting Cognition on the Radar

Author: Keiron Sparrowhawk, Chairman and Founder of MyCognition

Democratising knowledge of cognition to support pupils with special educational needs (SEN)

Approximately one in five children of school age[1], close to 2 million in the UK, is regarded as having some form of special educational needs (SEN). SEN covers a very broad spectrum; physical and cognitive problems; mild, moderate and severe conditions. Schools face the on-going challenge of offering a personalised approach to children with these very different needs, while at the same time ensuring equal opportunities for SEN pupils. SEN children are frequently held back by learning difficulties, which can also manifest into behavioural issues, making them feel isolated, anxious and depressed. Tight budgets and a lack of sufficient information to provide the right, personalised guidance for each unique child makes the task of supporting SEN children even tougher, as without the right resources schools are often operating blind. Cognitive assessment and training, gradually being introduced into UK schools, is showing promising signs of helping to tackle this issue, with benefits to children, teachers and ultimately to the whole of our society.

The link between special educational needs and neuropsychological conditions - or poor cognition - is well documented. Technological innovations have allowed us to harness our modern scientific understanding of cognition, leading to the development of advanced cognitive assessment tools and training games. A growing body of scientific research supports these innovations - a March 2015 study in The Lancet, for instance, linked regular cognitive training combined with healthy living to improved cognitive health.

With an increasing number of products available to understand and improve the cognitive health of children with SEN, the first step is to educate the educators about the value of such tools and put cognition on the radar as key to unlocking the potential of SEN pupils. Cognitive assessment and training is an approach to education which is finding traction with a rising number of schools – it provides teachers with game-changing insight into pupils with SEN, allows for subject specific as well as general learning support, is inclusive and can renew students' confidence in their own learning ability.

Putting cognition on the radar

Cognition is synonymous with the way our mind operates. It encompasses our ability to think, learn, respond and remember. Research indicates that to understand children with special educational needs, we must consider their cognitive health. Understanding children's cognition will lead to improvement in teaching practices, enabling cognitive training to support them at a fundamental level by targeting the areas of greatest need. But it needs something of a "mind shift" among teachers.

The vast majority of our mental activities can be categorised within five key cognitive domains: attention (concentration), psychomotor speed (speed and accuracy), episodic memory (recall), working memory (problem solving) and executive function (planning and strategic thinking). Many special educational needs are related to neuropsychological conditions associated with specific cognitive deficits. Working memory, for example, is the framework in the brain in charge of temporarily storing and manipulating information, which is essential in problem solving activities. Poor working memory is associated with dyslexia, dyscalculia and executive function with autism spectrum disorder (ASD) - strengthening this fundamental ability for children with these conditions could lead to improvements in their ability to process information and long term success in the learning environment.

Moving from understanding to training

The concept of cognitive training is based on the theory of neuroplasticity – the idea that the brain, far from being a static organ, is constantly changing, renewing, regenerating – just like any other bodily organ. Its evolution is based on patterns of mental activity: the aim of training is to concentrate repetitive effort in key areas to direct the flow of growth of neurones and neuronal connections, building new pathways that enable us to adopt new and better habits. Just as we can develop and improve our bodies through physical exercise, we can also develop and improve our mental wellness by exercising our minds.

Cognitive training is designed to drive blood flow and therefore nutrients to specific areas of the brain, helping to shape its growth. Research has shown that for this to occur, training needs to occur regularly and over a sustained period of time. Repetition of tasks is a way to ensure growth and the laying down of good habits. Here too, the parallel with physical health is apparent - the best results come from regular sessions in the gym rather than one-off workouts.

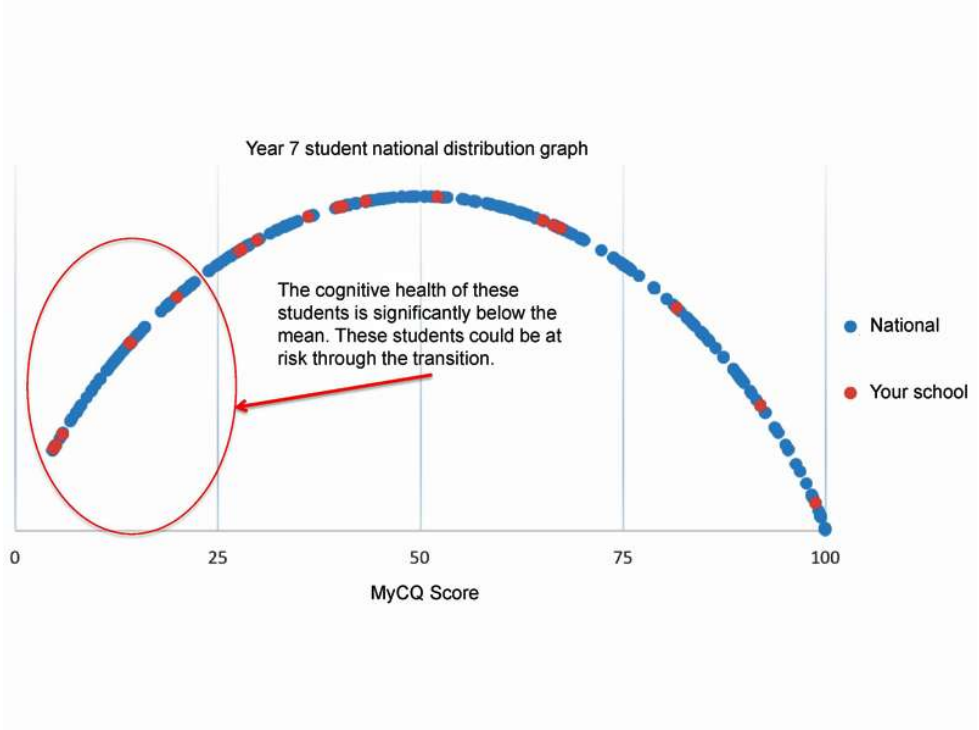
Democratising understanding of cognition

Introducing a cognition-led approach to learning is very much a new development in schools. Until recently, it would require spending a full day with a psychiatrist or specialist psychologist to gain an accurate understanding of a child's cognition. This would involve a series of pen and paper tests, in a time consuming and costly process.

MyCognition's online cognitive assessment, MyCQ^{Ed}, has transformed this field. MyCQ^{Ed} is a 15 minute online assessment which quantifies the health of the five main cognitive domains in order to generate a detailed map of an individual child's cognition. Developed in partnership with world class institutions including the Amsterdam Medical Centre and the University of Cambridge, this easy to use tool condenses 200 years of neuropsychological research into a self-administered test that can be completed on an iPad or computer.

The assessment will reveal the areas where a child is performing well in addition to highlighting any areas that may be of concern. A significantly low overall score indicates that the child may have a special educational need. In addition a child may have good cognition in three or four domains, but poor in one or two. They may be perceived as having good overall cognition, but are probably employing coping strategies to overcome their deficits. These coping strategies could unravel in stressful circumstances (like exams). Understanding a child's cognitive profile can be crucial to transforming their learning journey and this 'chart of cognition' is an unparalleled resource for teachers and carers who wish to offer the right, personalised learning experience to children with SEN. Rather than address surface issues, such as difficulties with a specific aspect of the curriculum or a one-off exam, this information enables teachers to go to the root of the issue and suggest methods and frameworks to help a child overcome fundamental obstacles to their progress. In this sense, again there is a clear analogy with physical health. Targeting surface difficulties is akin to giving breathing tips to an athlete so that they can take part in a 100 metres race without first healing more fundamental, hidden issues, e.g. a damaged heart valve, which puts extra strain on the heart and restricts bloodflow.

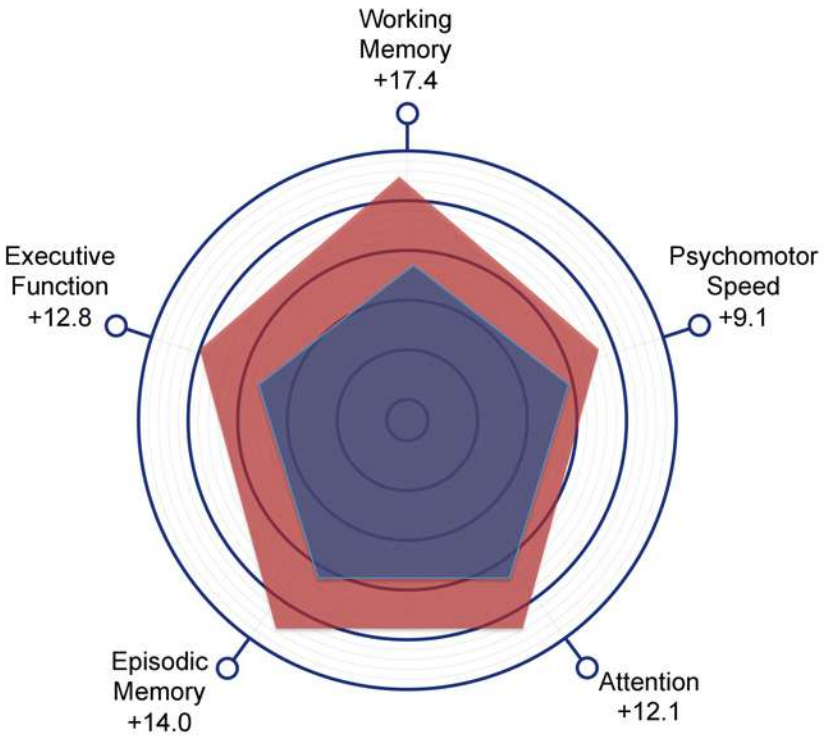
Schools already have an understanding of some pupils' learning difficulties as they are informed by SENCOs, parents and for some students, by their official Education, Health and Care plans (EHC). The prescriptions of the latter are a valuable resource for teachers. However, in many cases this report is superficial and analyses the symptoms of a child's condition, rather than the causes. Many children, with or without EHC plans or a SEN diagnosis, suffer from poor cognition and would benefit from well-informed support. Graph no.1 illustrates how MyCognition uses the MyCQ^{Ed} assessment to inform teachers about the cognitive health of their children, placing each on a spectrum of the national average, gained from several thousand users making up the normative data set. Additionally you can see where your class and school sit nationally. This enables head teachers to see how their strategy is working for the entire school and teachers to see which children would benefit from support and to introduce targeted cognitive training for those who need it most.



Graph 1: Illustrates how MyCognition identifies which students stand to benefit most from targeted cognitive training

Early adopters: Cognitive training in practise

MyCognition has partnered with over 30 schools in the UK to date. Sessions typically begin with a MyCQ^{Ed} evaluation of all the members of a year group. The resulting output is then analysed by MyCognition's education team, who work with teachers to identify which pupils would benefit most from cognitive training – typically those at the top and the bottom of the spectrum (although all would actually benefit). The training component then extends for two months, sometimes comprising three 30 minute sessions a week, or the possibility of a 15 minute session each day, e.g. as part of a breakfast/lunch club, punctuated with regular MyCQ^{Ed} assessments to track improvements in cognitive health. Graph no. 2 illustrates some of the positive results from this sustained work.



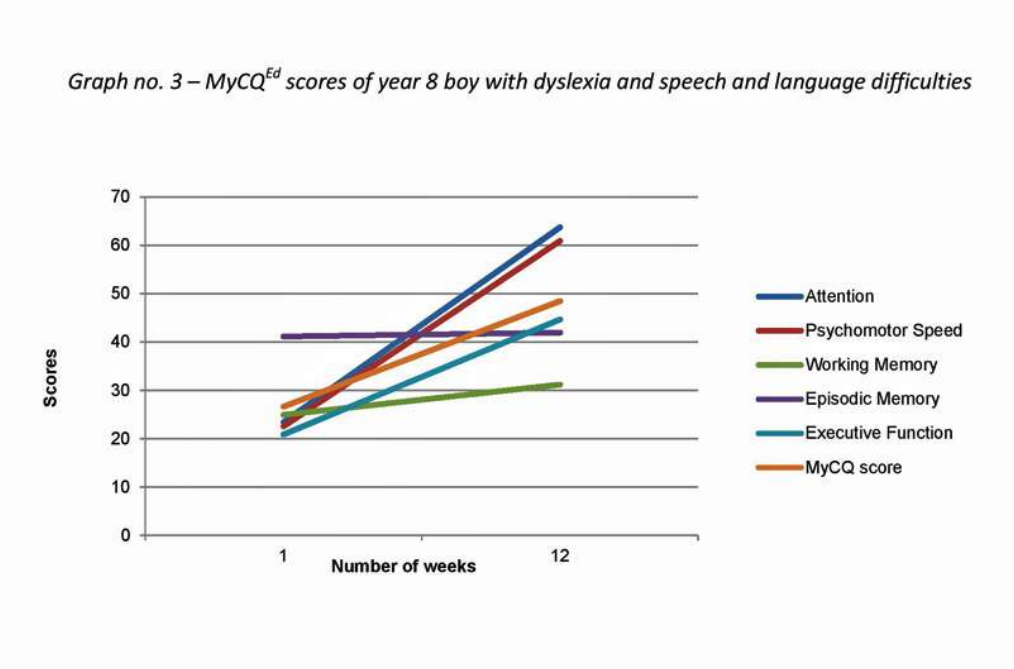
Graph 2: Illustrates the gains to cognition from playing the training games

The blue figure represents the averages over the five MyCQ^{Ed} scores in the initial evaluation prior to training.
The red figure represents improved average MyCQ^{Ed} scores after 8 weeks of training.

The assessment data is integrated with the online training games, which adapt to each child's profile: a pupil suffering from Autism may therefore encounter more in-game tasks designed to improve executive function, as this is the cognitive domain often associated with that special need.

Feedback from teachers and children has been incredibly positive, but most importantly children are demonstrating marked and measurable improvements in their cognition. The following feedback from a year 8 boy with dyslexia from a specialist school in London illustrates the benefits to SEN pupils who may struggle with traditional learning: 'My time at school is getting better since playing [the game] because I do my work very well now in history. I enjoy music more now… I do my tasks faster.'

This feedback is supported by his MyCQ^{Ed} assessment (see Graph 3), which revealed a 20 point overall gain to cognition over 12 weeks, with the domains of attention (concentration), psychomotor speed (doing tasks faster) and executive function (linked to the ability to plan work) the best performing domains.



Graph 3: MyCQEd scores of year 8 boy with dyslexia and speech and language difficulties

Such encouraging progress at the individual level also leads to improvement at the class level, creating a more productive working environment, as illustrated by the following feedback from Pippa Morris, SENCO at George Abbot School in Guildford: 'since playing MyCognition's cognitive health training games, the special needs students I work with have become more focussed, calmer and more cooperative in lessons. I can envisage using the programme at the beginning of the day, after lunch or as an intervention to settle students and improve their cognitive health too.

Subject specific support

If students are struggling with a particular subject, cognitive assessments can help identify underlying cognitive causes and address them through targeted training.

With mathematics, for example, there is a strong scientifically established relationship between working memory and maths attainment. Students that have difficulty in maths, such as those with dyscalculia and dyslexia, often suffer from under-performing working memory. Improvement in maths is a common theme in feedback from pupils who have trialled the games. A year 8 girl with speech, language, communication and processing difficulties said after her 12 week training programme: 'I'm enjoying my time at school more since playing the game. My lessons changed because I moved up a set in maths. I started playing the game and moved up. I like maths more now.'

MyCognition is working with the Psychology Department of Cambridge University to develop new cognitive training specifically targeting working memory to improve skills in mathematics. This will be incorporated into MyCognition's games in the future to enhance the ability of the products to

improve maths in children with both poor and good maths skills.

Following this work we are already planning to look at literacy as well.

Providing measurable results

The work MyCognition does in schools has led to highly positive results, demonstrating the potential of cognitive technology to provide fundamental support for children with SEN.

MyCognition has carried out a 600-strong controlled trial in the Stad & Esch School in the Netherlands to evaluate the effects on cognition of its cognitive training games. This study, endorsed by the Federation of European Neuroscience Societies[2], revealed that playing a MyCognition game for three 20 minute sessions a week, over four to eight weeks led to statistically significant gains in executive function and working memory.

MyCognition gathers MyCQ^{Ed} data on a rolling basis from its partner schools to rigorously measure the impact of cognitive training. Interestingly, the data shows that not all cognitive domains respond identically to cognitive training. While some domains, such as attention and psychomotor speed, exhibit rapid response times and concentrate the majority of gains in the first sessions of training, others such as working memory and episodic memory undergo close to two thirds of gains after an 8 hour threshold of training has been reached. This is not surprising and supports the view that some cognitive health domains are more fundamental than others. This means that a pupil with ADHD, for instance, might benefit from enhanced focus several weeks before a classmate with dyscalculia experiences better working memory, which might manifest itself in greater ease in maths lessons. These findings highlight the importance of sustained training and the necessity of having 'cognition-savvy' teachers on hand to get the best results.

The Lancet study revealed similar disparities between the responses of cognitive domains from training, with scores in executive function 83% higher in the brain training group, and 150% higher for processing speed. These are vast gaps relative to the other domains and an intriguing avenue for future research. As MyCognition expands work with even more schools throughout the UK and abroad, its database will expand to allow for systematic measurement of such variations. Thus the application of cognitive technology in schools, in addition to the benefits for pupils and educators, feeds back into the process of scientific research and informs our collective understanding of the human mind.

A balanced and healthy cognition is an invaluable asset in life, helping individuals to make good life choices. As such, a healthy cognition is essential for optimal educational development. MyCognition's aspiration is to offer this opportunity to children with SEN through its assessment and training programmes. As scientific insight into cognition advances, this becomes an increasingly achievable goal and a logical area of innovation for modern schools. There is an opportunity for schools to offer potentially game-changing

support to children with SEN, and in the process, push back the boundaries of our understanding of the human mind.

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Website: http://www.mycognition.com/

References:

[1] Ofsted chief inspector Christine Gilbert, 2010
[2] 9th FENS forum for neuroscience, July 2014

ETAG - Education Technology Action Group

Author: Bob Harrison

Just before they all got reshuffled by David Cameron last year Secretary of State for Education Michael Gove, Education and Skills Minister Matt Hancock and Universities Minister David Willetts got their heads together and invited a group of education professors, teachers, education technologists and technology industry people to come together and advise them about the future of learning technology across schools, further education and skills and Higher Education.

Since this article was written the recent General Election appears to confirm that current policies will continue. (Editor).

Two significant factors prompted this decision. Firstly the Further Education Learning Technology action group established by Matt Hancock had reported after 16 months work making recommendations designed to address the urgent need for FE providers to make more effective use of technology, especially online and blended learning, to help the Government realise its policy aims for UK Plc. Despite millions of pounds investment in quangos such as BECTA, LSIS and JISC some research from the Association of Colleges showed that less than 30% of Colleges were using technology effectively.Surely lessons could be learned across all sectors?

Secondly it appeared Michael Gove had had a Damascene conversion about his “schools know best policy” Indeed at the inaugural meeting of the Education Technology Action Group he stunned members by saying:

“When we first came to power our aim was to get government “out of the way” and to let Heads and Teachers take professional responsibility and make the decisions Government could and should not be taking. However we have realised when it comes to the use of digital technology for learning it is such a fast moving area we now realise that “getting out of the way” is simply not enough. There is a role for Government to support innovation, disseminate what works and remove any existing obstacles to teachers innovating”

He then stunned the group by saying “and learning with technology should be fun”.

So ETAG, chaired by world renowned digital technology evangelist Professor Stephen Heppell started work with a very tight timetable and although this was an independent group of volunteers it had Ministerial support with the full backing of a team of civil servants from DfE and BIS.

The group has now produced its recommendations to the new Ministerial team following the summer re-shuffle and has fed nicely into the pre-election

campaign. The recommendations are believed to have cross party support as which political party would not want to be associated with improving learning and ensuring our learners, young and old are prepared for a highly competitive global digital economy?

The work of ETAG consisted of 3 groups of recommendations.

1. Access, Equity and Funding.

Connectivity is vital. It cannot be right that a child or an adult learner's access to the world of knowledge and learning is restricted or dependant on where they live? It is essential that all education providers have a fast broadband connection and a resilient internal infrastructure to cope with the number of learners who will surely be demanding increasing amounts of upload and download capacity?

2. Leadership and Professional Development

- Do Governors, Principals, Head Teachers and senior leadership teams have the right knowledge understanding and skills to plan strategically for education's digital future?
  Do teachers and support staff have the confidence and capability to use technology effectively not just to improve teaching but more importantly to improve learning and empower learners?
- Is there sufficient evidence and practitioner research and time available to make informed pedagogical choices?

3. Assessment and Accountability

- Does the assessment system have too much influence on the learning?
- Does the assessment tail wag the pedagogical dog too much?
- Why are we not using onscreen and online testing more?
- Does the Inspection regime mitigate against risk taking and innovation?
- Are OFSTED inspectors sufficiently aware of the issues of online, blended and virtual learning?

Bob Harrison is a school and college governor and Education Adviser for Toshiba Northern Europe. He was a leading member of FELTAG and chaired the Access, Equality and Funding group for ETAG. He will be on the ETAG and FELTAG panel sessions at EiC.

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A full report - Education Technology Action Group: our reflections can be downloaded from here.

More hats than de Bono!

Author: James Massey, Educational Consultant for Discovery Education

Do we need to relook at the role of Computing Coordinators? James Massey offers some thoughts on this wide-ranging role.

Do we need to relook at the role of Computing Coordinators?

I was asked recently to define my role as an Educational Consultant for Discovery Education. After a moment's pause, I explained the facets of the role and life went on. Afterwards, I thought about all the other elements I could have mentioned and considered the number of ways I could have answered the same question.

I then thought back to when I was a full-time class teacher. The Oxford English Dictionary suggests it is a person who 'Imparts knowledge to or instructs (someone) as to how to do something'. The first thing that surprised me was that the definition didn't fill a whole page!

The fact is, the role of a teacher is a never ending to-do list which involves many different guises:

- Teacher (AKA 'imparter of knowledge')
- Councillor
- Therapist
- Advocate
- Project manager
- First aider
- Riot police
- Behaviour analyst
- Crime scene investigator.

We don't do these jobs full time of course. However, we've all dabbled in most.

I then got to thinking about Computing Coordinators. I was an ICT coordinator in a past life and quickly realised that I needed to add to the above list:

- Tech support
- Photocopier repair specialist

- Cable untangling technician
- Login and password enabler
- Technophobe councillor
- Digital camera search and rescue team

It was certainly a big job. Not to mention all the curriculum planning across the school.

It's fair to say that digital technologies are becoming less and less exclusive to discreet teaching practices. Just like the written word is not exclusive to literacy lessons. We now, more than ever, have pupils using digital devices and software in a number of subject areas for a number of different reasons. Quite right I'm sure you'll agree.

This starts to splinter the coordination of this area into two distinct elements though. Teaching the skills needed to use digital technology successfully and using digital technology to facilitate learning. The latter can certainly become less about the tools and more about the relevant subject knowledge, which is where a good coordinator can really come into their own; or others come a little unstuck. Either way, these are two mammoth tasks in themselves.

The job of coordinating this digital movement across subject areas tends to be bigger than any one person now and the responsibility needs to be distributed. I speak to a large number of coordinators who feel quite overwhelmed by the implementation of the new Computing curriculum, particularly the elements of coding which have cross-curricular themes. For this reason, coordinators are even having an identity crisis around what to call themselves. I've heard the title of ICT or Computing coordinator, Digital Director and Technology administrator amongst other more creative attempts!

The main stumbling block when implementing digital technology and/or the new Computing curriculum generally revolves around the different levels of ability within the school. It's as much about winning hearts and minds as it is up-skilling teaching colleagues. Take coding as a large example. Teachers are being flung into an educational wilderness which is filled with great possibilities, but just as many pitfalls. Some teachers have never written a line of code before and previously thought debugging was something you did with a nit comb. Others have been programming computers for fun from an early age. With such a large efficacy gap, any hope of properly implementing this important aspect of the curriculum will drag its heels for too many terms.

A survey carried out by Computing at School and Microsoft (Published on Jan 13, 2015) revealed that almost three quarters (73%) of teachers feel confident delivering the new Computing curriculum, although many still lack confidence in certain areas such as creating and debugging computer programmes along with computer coding. Pupils also thought along the same lines, with nearly half (47%) of young people aged 9-16 years claiming that their teachers needed more training. 41% actually admitted to regularly helping their teachers use technology

The positive aspect is that after that first autumn term of teaching the Computing curriculum, 69% surveyed said they enjoyed teaching computing. However, 81% called for more training, development and learning materials. Changes in the curriculum since September 2014 are making pupils not just consumers, but creators. Where it was enough for them to just be in the driving seat with ICT, they now need to be the mechanic and engineer with computing. This is a real shift in approach and so teachers need to think differently.

Any successful and sustained solution has to involve all the stakeholders pushing in the same direction. This messaging has to come, not just from the coordinator, but from different levels within the school, including pupil groups. The most successful implementations I have seen have always been collaboratively driven, not just directed from a lone person's enthusiasm for change.

As with any digital technology implementation strategy, the infrastructure has to first be in place. If we are wanting 30+ pupils on tablets at any one time, we need to have the broadband capacity and devices set up to make sure this is seamless. Teachers will not appreciate the extra behaviour management that comes with unreliable tools in class. Access to devices and services needs to be as hassle free as possible. Otherwise you face an up swell of naysayers.

There will always be lost passwords and usernames so having a reporting system which addresses this quickly is imperative. The sooner teachers can flag this and have it dealt with the better. If you're locked out of your bank account and can't get money, you won't wait a few days to let the bank know. It should be the same with anything that is successfully supporting teaching and learning on a daily basis.

Teachers need to then see the value of change. This is about observations that demonstrate this approach and how engaging and relevant it is to pupils in class. Whether this is done in-house or externally is dependent on the level of current practice. What is important is that everyone is invested in the journey of teaching coding or using digital technology and can see what is truly possible within their school.

The next step has to be a continual cycle of professional development. This gives a great opportunity to not only provide the pedagogical knowledge required for everyone involved, it also gives a moment for teachers to network and discuss successes and challenges they have encountered. This is about growing a cohesive environment of shared good practice. If it is a non-starter to get everyone together for PD on a regular basis, a lot of schools go down the route of appointing a number of digital leaders who support the curriculum at different stages. The best PD can even involve technicians so they can see what teachers are trying to achieve and offer real support through understanding.

The point is that we need to consider what we are now asking of our coordinators and think about how we can move forwards strategically with the

new Computing curriculum and digital technology implementation. In order for this to be a real success, we need to look at avenues that will support the school over a long term. The odd Inset training session will not have a lasting impact. It would be a massive shame if we did not grab this opportunity and run with it for the sake of our pupils now; not for pupils in a year or two.

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ICT Teaching is "dull and boring"

Author: Bob Harrison

When the new secretary of state opened BETT in January this year it was exactly two years since Michael Gove delivered his "The teaching of ICT in our schools is dull and boring" speech. Some HeadTeachers believed that they no longer had to teach ICT and ICT teachers were bewildered. The truth was, and is, that ICT (now called computing) is a mandatory national curriculum subject and MUST be taught! (unless you are a Free school or an Academy of course)

Despite OFSTED evidence to the contrary Michael Gove relied upon the Royal Society Report "Shut down or restart" sponsored by the British Computer Society, Google, Microsoft and the University Computer Science Departments of a few Universities whose enrolments and employment rates were down and who believed they had a "pipeline problem". The particular pipeline problem finger was unjustly pointed at the teaching of ICT in schools.

The ICT curriculum needs a Rewrite

This prompted a feverish round of activity during the rest of 2012/13. The DfE commissioned the British Computer Society and Royal Academy of Engineering to coordinate the production of a new programme of study for ICT. Over 40 education and computer professionals, and few teachers, rewrote the new ICT programmes of study which included study areas such as Digital Literacy, Information Technology and Computer Science. Following many meetings, consultations and hours of work the final and agreed version was rejected by the Schools Minister Liz Truss and rewritten by two officials of the British Computer Society over a weekend. They edited out most of the IT and Digital Literacy and replaced it with Computer Science.

The new curriculum came into force on first September 2014 and the programming and coding elements of the new programmes of study caught the eye of the media. Computing even made it on to the 6 O Clock news courtesy of Rory Cellan Jones*: "5yr olds taught to code" "coding the new foreign language" "preparing the next generation of Zuckerbergs, Jobs and Gates"*

All these make good click bait but the reality of the new curriculum is very different. Coding and programming are only a small part of a much more complex and detailed programme of study. Sadly what has made good headlines is a long way from the reality of the new curriculum. Whilst coding and programming do feature the needs of the broader IT industry and indeed the needs of children as digital citizens and creators require much more than computer science.

What the programmes of study actually contain

Even a non computer scientist such as myself can easily see that the programmes of study contain areas that are more related to the broader and creative use of technology. In fact two of the aims of the computing national curriculum are much broader than coding and programming:

All pupils :

- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are responsible, competent, confident and creative users of information and communication technology

If you dig deeper into the content you will also find:

- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
- Uuse technology purposefully to create, organise, store, manipulate and retrieve digital content

And you will also find the occasional use of the word “creative”:

- undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.

So there is so much more to the new curriculum than the headline grabbing programming and coding which has troubled many teachers.There is also a view amongst the Computer Science lobby that “computational thinking” will be an added bonus for all children irrespective of whether they will go on to make become Bill Gates or Alan Turing.

Unfortunately there is no reliable evidence to support this view and such a radical reform of the curriculum on such a flimsy evidence base must be unprecedented in education policy?
So what knowledge, skills and understanding do IT employers want and will children need to thrive as digital citizens and workers in an increasingly competitive and global digital economy?

E Skills http://www.e-skills.com/about-e-skills-uk and TechUK , http://www.techuk.org represent a much broader view of the IT industry than the very narrow computer science focussed British Computer Society and a glance at their websites suggest coders and programmers, and indeed computer scientists, are the tip of a much bigger employment iceberg!

So does the new computing curriculum really prepare young people for the future or is it the result of a particular narrow interpretation of computing created by a small group of passionate people with a clear vested interest?

The Governments own Technology Strategy Board (www.thinkinnovateuk.co.uk)now have a “High Level Pipeline Skills Strategy Group” which is considering what needs to change to ensure a steady supply of a digitally creative and competent workforce. E Skills website illustrates the wide and varied careers available in IT http://www.e-skills.com/careers
All of this points to the employment reality that we need a generation of creative digitally skilled and confident people in the workforce who have a much wider set of skills not just programming and coding. Indeed the proportion of Google, Microsoft, Toshiba employees who need programming and coding skills is relatively small!

So are schools prepared?

There have been two recent surveys into the state of readiness of schools to teach the new computing curriculum and both produced remarkably similar results.

The TES/NESTA survey carried out in summer 2014 suggested that 70% of teachers were not confident teaching the new curriculum.

The Royal Academy of Engineering carried out a similar survey in the summer of 2014 which suggested a slight improvement but a very patchy picture emerged which prompted the Chair of the newly formed UK Forum for Computer Education, Chris Mairs, to suggest that the amount of money provided to support schools in the teacher development necessary to teach what essentially is a new subject was wholly inadequate in light of the challenge facing them.

This does not mean there has not been a lot of activity on the ground. The heroic efforts of the volunteers who make up the computing at schools network, CaS, the Master Teacher scheme, The Barefoot computing initiative funded, the efforts and support of the IT industry to retrain ICT teachers and the efforts to increase the number of Computing graduates into teaching with the DfE/BCS Bursary scheme which has so far recruited over 120 future teachers with a computing related first degree, have all helped.

The biggest effort however has come from ICT teachers themselves who have faced up to this challenge with enormous positivity and enthusiasm give the starting point was Michael Gove telling them they were doing a poor job teaching “dull and boring “ICT.

But has it been enough and do we have qualified teachers? The current state of play and the future supply of teachers is a worry according to Andy O’Connell, Head of Initial Teacher Training at Chester University:

"Teachers are ‘having a go’ at implementing the new programmes of study, and are excited by the responses they see from pupils, but many lack confidence. Those I meet are telling me they are accessing resources from organisations like CAS, but feel they need help with the pedagogy. They are still talking, until prompted, primarily about coding/programming rather than the whole PoS, few are finding time to look at the theory behind Computer Science..”

“In ITT, recruitment looks similar to last year at the moment, so unfortunately it looks, at the moment, like numbers won’t hit target. Those entering training are keen to implement the new curriculum. However, their training is influenced by the fact that they often have more subject knowledge than their mentors."

What next and when will we know if it was worth it?

It will be at least two years before OFSTED will be in a position to provide some evidence of how things are going and it will be the next generation before we will be able to make a judgement as to whether it was all worth it or not. By that time many ICT/computing teachers will have retired and technology will have moved on. What is important is that we keep the National Curriculum constantly under review to ensure it is fit for purpose and then make sure it is redesigned to cater for the needs of all children and the broader IT industry .
The pipeline problem could have been elsewhere of course.

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DB Primary at Arden Primary School

Author: Sam Harris, New Era Education Ltd

Can Digital Literacy be successfully integrated into the new Computing curriculum? The answer is resounding yes and in this case study New Era Education demonstrate how DB Primary can help pupils become digitally literate "at a level suitable for the future workplace and as active participants in a digital world."

As a provider of educational computing solutions for the primary sector, we at New Era Education are continually interested in understanding the pros and cons of teaching the new programmes of study for computing. In providing an all-in-one software solution specifically designed for primary schools, we aim to ensure that all users - staff, pupils and parents alike - are able to engage with digital literacy, e-safety, programming skills and more, successfully integrating new technologies, aims and objectives into an already jam-packed and time-restricted curriculum.

As part of our own research we have been privileged to conduct case studies with some of our schools, working closely with ICT and Computing Co-ordinators, Key Stage Leaders and Senior Management staff, as well as pupils themselves. A particular highlight was a focus on embedding Digital Literacy into the primary environment, with the new national curriculum aim of ensuring that pupils become digitally literate "at a level suitable for the future workplace and as active participants in a digital world."

The following summary of one exemplar 2015 case study serves to demonstrate how digital literacy expectations can be successfully implemented, whilst emphasising the importance of a whole-school community approach and the support of parents and all school staff in achieving that success.

Meeting the needs of schools today

Arden Primary School in Sparkhill, Birmingham is a three-form entry school located within an inner city area of Birmingham. During the years prior to 2013 the school struggled to introduce a learning platform that was in reality geared more towards secondary learning. Nationwide, Local Authorities were

encouraging, often dictating, schools to take on a learning platform. Many of these products simply weren't designed or adapted to appropriately meet the needs of primary students and fell short of their intended purpose.

At Arden, such a solution did not engage pupils or teachers and was thus left unused and deemed irrelevant to a primary environment. Staff did not respond as positively as was hoped to training on the suggested platform and the school's aim of embedding the resource as an enhancement to teaching, learning and school life remained unfulfilled.

In 2013, after their previous, problematic experience with an unsatisfactory platform, Arden began to reconsider the way they approached ICT within the school.

Primary specific solutions

With imminent changes to the curriculum, and with the introduction of computing in particular, Arden Primary School sought a learning platform that would specifically support and promote digital literacy amongst primary pupils. They wanted a virtual learning environment that would safely and organically encourage online activity amongst pupils and that would fit flexibly into lesson delivery.

DB Primary incorporates a wide, comprehensive variety of tools and features in a safe, secure, controlled environment and which pupils can be sequentially taught and encouraged to use in positive, appropriate ways.

"As a school we don't buy anything unless we know it's going to work and fulfil our needs. When we first saw DB Primary we just went "fabulous!" Big icons, big buttons... This is clearly designed for Primary children. You want it to be like that. You want it to be bright and engaging. We have DB because it completely 'ticks off' all the computing curriculum requirements for Digital Literacy, and more. DB is Digital Literacy, and Digital Literacy is DB." – Carl Brown (ICT Co-ordinator)

DB Primary and associated DB Learning Library resources are designed and built specifically with both the primary school sector and the computing curriculum in mind, resulting in a learning environment that, according to Mr P. Aziz, Network Manager at Arden Primary School, "delivers the computing curriculum and Digital Literacy in an active way." For Arden, other platforms and products simply didn't meet the needs of primary users so well.

Whole-school community collaboration

Through the efforts of dedicated ICT Co-ordinator and Teacher, Carl Brown, and Network Manager Mr. Aziz, DB Primary has gone from strength to strength at Arden in the past year. A crucial turning point for the school was having all parents involved, understanding what a virtual learning environment meant for their children and becoming fully supportive of the school's developing computing curriculum. For them, as much as for many teaching staff, such developments in technology remain 'new' and somewhat unknown; for pupils, of course, they are more commonplace and familiar, being a natural and almost expected part of their own generational tools. DB Primary's collaborative features provide as much for parents as for other individuals within the wider school community.

For pupils who face challenges within education, DB Primary also acts as a 'leveller', engaging all pupils equally and ensuring that all become digitally literate, despite their struggles in other subjects and environments.

"With DB Primary, because they (the pupils) are all engaged, I can focus on the set few that need my help. This pupil came to our school in the middle of last year; she had no English - if you didn't notice she was the chatterbox at the front - she literally came saying "hello", "yes", "no" ... that was it - and you can see what she's accomplishing now in DB. In another class I have 3 pupils who don't really speak - one with EAL, one on the Autistic spectrum, another with low self-confidence - and in my ICT lessons using DB Primary they all speak to each other, talk about their work, point to the screens excitedly and display no issues at all." - Carl Brown (ICT Co-ordinator)

Teachers throughout the school have embraced DB Primary and visiting classrooms buzzing with activity clearly demonstrates this

From teachers using the platform and content resources on interactive whiteboards in lessons, through classes of pupils all creating and manipulating a variety of multimedia via their DB accounts in focussed ICT sessions with Carl, to pupils completing homework set for them in tasks and forums outside of school hours, DB Primary has helped to change the way people communicate and learn at Arden. Staff are excited about the platform and eager to develop their own skills further, creatively incorporating DB technology into their teaching and learning and thus meeting the requirements of the Computing curriculum with ease.

"There's a lot going on (with DB Primary) across the school, a lot of homework going on, especially for Year 6 - it's stunning, what they do, and they're on it constantly. Use of the platform is always developing... Look at where they (the teachers) have come from... it's been taken on and now they're excited about it, and the children lead the way." – Tony Lacey (Headteacher)

Championing Digital Literacy

Since DB Primary has been firmly embedded in the school's wider curriculum both pupils and teachers are using and developing digital skills within the environment at a rapid pace.

In observation, Year 4 pupils were confidently able to create, store, manipulate and retrieve digital content, having used creative software to enhance images which were then uploaded into year-group blogs and commented on - including comments being made to other comments! Calendars were also used creatively and accurately. Pupils navigated all of these tools, features and more with ease and confidence, excitedly discussing their work. Year 6 eloquently described how much they love using DB Primary to safely and easily communicate with each other, particularly outside of school hours, and now have all of their homework set through tasks and forums. All pupils demonstrate a thorough understanding of e-safety and freely use appropriate technological vocabulary.

Arden Primary school's forward-thinking community shares a vision for education in which its pupils are in the driving seat, and this is abundantly evident in the attitudes and practice of staff and pupils alike towards DB Primary. Staff enthusiasm for the features of DB Primary means that the setting of homework online, for example, and finding new ways of incorporating technology into lessons has never been easier.

New Era Content Portal statistics show that Arden's pupils and staff are among the top-10 users of the DB Learning Library content. Furthermore, in examples cited by ICT Co-ordinator Carl, pupils in the current Year 4 cohort are able to complete tasks, access and use online tools and manipulate online content in ways which would previously only have been considered appropriate for Year 6 and beyond.

"Once all the children are on DB Primary (in a lesson) and they're all engaged, I've almost done myself out of a job!" - Carl Brown (ICT Co-ordinator)

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