NAACE

THE EDUCATION TECHNOLOGY ASSOCIATION

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STAY AT HOME

Thanks to all our professionals & key workers

As you will read in this edition there are many things to consider during this very difficult period in our lives, not least how we can best help our schools and pupils to progress and develop during the lockdown period and as we emerge from it to whatever the future holds. During this period, on behalf of the Board of Management and all Naace members I would like to record our thanks to the wonderful group of people - our key workers - who are looking after us all in so many ways. From members of staff in the NHS, Care Homes, Community Care, Emergency Services, Logistics, Super-markets and the many teachers and school support staff, who have been providing school-based activities for the children of key workers and those children who are vulnerable - thank you. Not forgetting, of course that many of those members of staff in schools will be members of Naace - we applaud and support you!

Phil Blackburn
Chair,
Naace Board of Management

Contents

Editorial

Where were we before March 2020?

This lockdown situation is certainly unprecedented, but made more difficult by the circumstances that were impacting on teachers before this blow. I have tried, therefore, to put together articles that address in different ways the current lockdown: professional issues like recruitment and retention that have made the situation worse than it might have been in schools; immediate ways in which professional education technology communities like ours can share our expertise; and, suggestions for moving forward after the lockdown.

In fact, the first two articles are about successes that will endure whatever the crisis. We have to remember that professional organisations like Naace have built strong frameworks for practitioners based on knowledge that will last. Indeed, as far back as 1998 Naace launched the Self Review Framework, so this year the SRF is 21 years old. Phil Blackburn, the current Naace Chair, says the journey has been interesting, even bumpy at times: 'but here we are, still supporting each other on our journeys with technology inside and outside the classroom. The technology has changed – to say the least, but the underlying will of all of us to get the best

Porfessor Christina Preston

Professor Christina Preston has been at the forefront of education and technology for over 25 years. She has been a member of Naace since the 1980s and is the editor of the Naace Advancing Education journal. In 1992 founded The MirandaNet Fellowship whose members have become global thought leader in EdTech with over 1,400 members in 80 countries. At the core of the members'' philosophy is the sharing of knowledge and change management based on grassroots evidence and research. The members work with EdTech companies to research into the impact of technology and learning in classrooms and report on their findings for the global community. Christina has won 5 international awards for her contribution to education innovation and community of practice development. international awards for her contribution to education innovation and community of practice development.

out of the technology, whatever it may be, for our pupils hasn't – and to be fair I don't think ever will!' The SRF will provide schools with a framework for their education technology development in the light of what the lockdown has taught them. It is likely that, in schools where education technology in all its strands has been neglected, new funding will be demanded by teachers, parents and pupils now they realise the value in learning.

Sally Mckeown describes the stunning facilities that put University Technical College students ahead of the game. The reader is warned that there will be an acute shortage of engineers nationally, so this is a marvellous opportunity for young people. From the very beginning students are expected to see themselves as young professionals with a clear understanding of how the business world works. There is intensive coaching in technical skills, communication, presentation and interview techniques. The aim is to turn young students into well-rounded, confident individuals as quickly as possible. Technology is at the heart of this experimental approach to technical education, and although there are critics, the results are beginning to prove them wrong.

The last article comes from a report that draws on professional organisations' members to explore

ways in which technology might assist teachers who are feeling overwhelmed by the amount they have to do and by the frequent government changes to practice. In this article we focus on the views of members of Naace, ITTE and the MirandaNet Fellowship, who were agreed that one way to tackle recruitment and retention issues is to offer membership of professional organisations. What members were saying is that we need the support, encouragement and understanding of our colleagues to pull through in stressful times. Little did we anticipate how Covid-19 was going to close the schools and further and higher education. In fact the authors suggest that 'experts' like us seem to be back in favour when the going gets rough.

Resourcing the current situation

So then we turn to two experts to provide resources for the teachers and parents who are unexpectedly involved in home-schooling.

Firstly, Professor Sarah Younie started a small project in Leicester that has now attracted a global following and multi-agency funding. The original aim of The Germ's Journey was to engage children in the Early Years Foundation Stage (EYFS- 3-5 years of age) and aid their understanding of germ transmission and infection prevention through the use of specifically developed interactive learning resources. But now the project is being introduced in Indian and Africa because the engaging resources are having some influence on the spread of germs.

Secondly, Naace is a member of the Council for Subject Associations (CfSA) which has created a comprehensive directory of members and other organisations in recognition of the need for better information about the support and resources available to heads, teachers, Governors, Initial Teacher Training providers, newly qualified teachers, and other educationalists. Members may find these resources useful.

Thirdly, Rob Ellis has spent some time pulling together a brief overview of free resources for Naace members to pass on. With so many children off school because of the coronavirus he has collected together materials to help parents find suitable material for their children while they are at home without the parents themselves actually having to become teachers. Indeed, not only does he provide free resources but he also provides hints and tips about how to search and about how to use the web safely which parents will find useful.

Finally, educational consultant and researcher, TheoKuechel has been developing a new resource, The Open Content Toolkit; an online guide to finding and using open media & resources in education. With links to archives and gelleries there are millions of documents, images and video to download, study and enjoy at home.

Looking forward

In the final section Naace members are invited to work with other organisations to take over the education technology agenda that has been neglected by this government. The view in all three articles is that EdTech companies, educators and policy makers should be carving out a common long-term future.

Professor Mike Sharples talks about the Tim Berners Lee Contract for the Web that Naace is invited to join up to. Mike's central idea is that pedagogy should drive the innovations in education, not technology. As he explains, "We are discovering new and powerful ways to teach and learn, such as spaced learning, crossover learning, design thinking, dynamic assessment, threshold concepts, teachback and translanguaging. There's a wonderful swirling together of positive influences on education from

research and innovation in the science of learning. We have the opportunity to build not just a more humane web, but a more educative one".

An Australian view of how cooperation and collaboration might work is outlined in Elizabeth Hartnell Young's article, Can governments, businesses and schools work together to craft a positive future? 'It is clear that comfortable patterns of relationships have been disrupted in society, and particularly in education', she says, before COVID-19 came upon us and catapulted us even further into a social experiment that involved schools in many countries going online and #learningathome becoming a new hashtag. Her discussion is about the Australian government banning mobile phones in schools as the result of some limited research. She asks some difficult questions about the results of COVID-19, when any connected device was a welcome addition to the resources for learning. Will this be a learning experience for all involved? Will governments be mature enough to review their bans on mobile devices?

All our organisations work with the EdTEch companies. Graham Newell, IRIS Connect's Director of Education, is one of our colleagues who has always had strong connections with our communities. But he admits that these are unusual times and this is not a usual article for this journal. At this stage, he points out, we don't know whether school closures will be short, medium or longer term or whether this is the first of a series of closures as infection rates have second or third peaks. Another possibility is, when schools do reopen, it will be for full time attendance or a blended part-time approach to keep class sizes smaller.

However, Graham reiterates, we are all in this together and that includes teachers, schools, academics, researchers and the EdTech industry. At the core of this article are two questions: How can we, as professionals in an educational technology community, support schools? Can we, if we work collaboratively, create positive and sustainable changes?

Graham's questions are in line with the other writers in this journal. As Naace members we will all want to work with all the players to decide what to do next.

Where were we in March 2020?

The Naace Self Review Framework is 21 years old

Phil Blackburn, Naace Chair

Back in 1998 Naace launched the Self Review Framework, so this year the SRF is 21 years old - and so is NaaceMark. So, congratulations to all the schools, teachers, advisors, consultants and pupils who have been part of our journey together! It has been interesting, even bumpy at times, but here we are, still supporting each other on our journeys with technology inside and outside the classroom. The technology has changed – to say the least, but the underlying will of all of us to get the best out of the technology, whatever it may be, for our pupils hasn't – and to be fair I don't think ever will!

Back in 1998 I remember sitting in a room near Nottingham, Naace's home at the time, with Julie Frankland and Chris Stott as part of the Naace Quality Assurance Group. Other colleagues were with us and apologies to them but with 21 years of change and me now being 64 their names escape me – sorry! We were meeting with colleagues from Cambridgeshire Education Service, Barry Dowler and Dorothy Davis, who had been developing a review system for schools reflecting on their progress with computers. From this discussion emerged the Naace SRF.

Initially the SRF was a paper-based system, where you literally filled in your notes around the printed pages! This made it particularly interesting for the assessor coming to visit a school with a view to recommending the school to receive the NaaceMark Award.

Phil Blackburn

Phil has been a Naace member for 25 years, and recently stepped up to join the Board of Management. Phil's support has long underpinned all that Naace has sought to achieve, and his development into one of the most sagacious members on the Board is to the credit of the association.

Having spent nearly 20 years working in a local authority capacity, Phil has a perceptive knowledge of the support that can really make a difference to schools. He has championed a pragmatic approach to edtech progress throughout his career, and continues to do so for Naace.

Phil has also been instrumental in helping Naace to sharpen the effectiveness of the Self Review Framework and NaaceMark Award – his belief in the potential of Naace to help schools is truly admirable.

Often the first to bring new ideas and strategies to the table, Phil's position on the Board helps to drive the association forwards every day.

Over the twenty-one years in between the SRF has changed ownership to BECTA, the Award became the ICT Mark and then, following the demise of BECTA, returned to the ownership of Naace in 2010/11. This year the Award returns to its original name NaaceMark. In between the SRF became an online system to allow schools to record their progress, but a free paper copy is still available. One of the changes from the original model was the introduction, with the online system, of guidance materials available to help schools decide where they are in the levels and how to develop onwards.

Since 2004 when the first online system came into existence some 14,000 schools have used the SRF. Not all of them went on to apply for the Award because they had gained the support they needed from just using the Framework. It is always good to reward schools who apply for NaaceMark, but

essentially Naace is a charity and its charitable aims include helping schools to get the best from their educational technology. So, in using the Framework a school is helping Naace achieve its charitable goal – so thank you to all schools who have used the SRF, you've helped Naace fulfil one of its goals.

The SRF has been updated a number of times to better reflect both the technology and how schools are using it. Recently the updates in 2014 for Computing Curriculum were massive and have been followed in 2018 with considerable updates about the types of technology, how schools use it and a massive change to the Digital Safeguarding section.

The updates are written by the SRF Writing Group who are all members of Naace and between them have vast experience of headship, school leadership, ICT Advisory Work, Digital Safeguarding, Professional Development, resource development, classroom practice and assessment.

The current maturity model

The whole scheme was built on and remains a maturity model for schools to decide where they are in their use and understanding of technology – not for others to decide! The basis of the NaaceMark Award was and still is for Naace to confirm the decisions a school has made about its own development. But of course, behind these simple explanations rest a whole plethora of systems and quality assurance processes to ensure that the decisions made are fair, balanced and consistent. To this end the new SRF system has built-in processes to ensure consistency when it comes to the NaaceMark Award. As well as the visiting assessor, who still provides contact with the school, all their decisions, including the questions to ask before and during the visit, are discussed with a second assessor, who, whilst they don't visit the school, has access to the school's data and will contribute to the whole process in a supportive way. This will also bring greater consistency to the award process. We hope in 2020/21 to apply for ISO9001:2018 Quality Assurance Certification. Who knows? - we might be the first schools' award provider to gain the qualification. In honesty, NaaceMark is a QA award, so really the organisation awarding it should be QA'd themselves – shouldn't they?
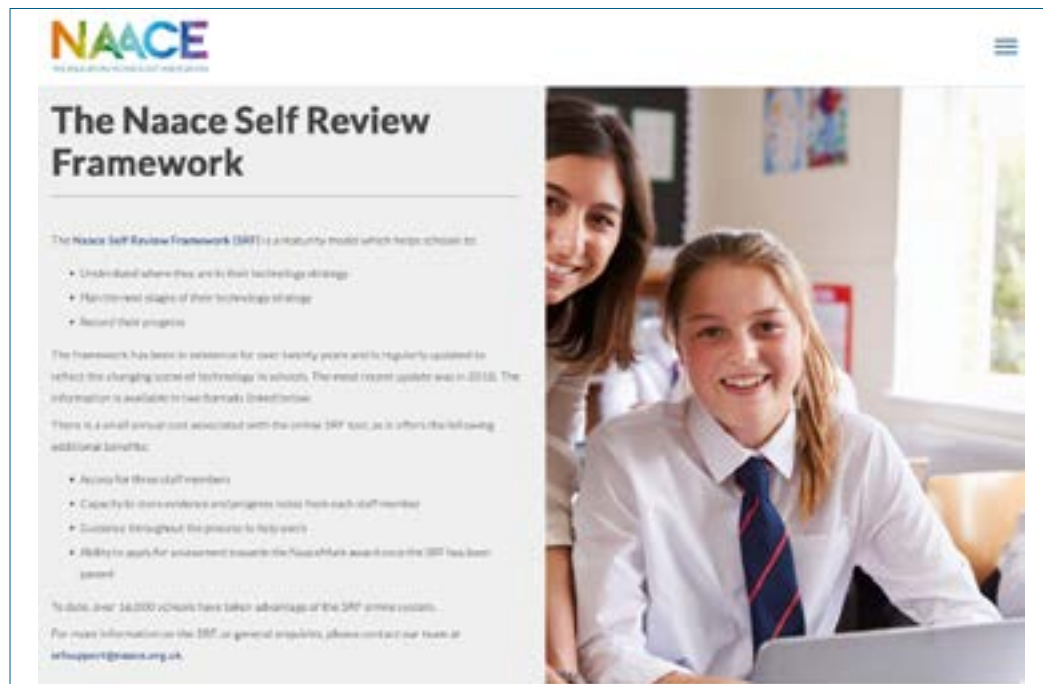
So where do we go next? Well, Naace has revamped its membership arrangements as well as launching a new web site. We are making large cuts in the cost of most membership categories, particularly schools membership. As part of the reduced cost to schools, access to the SRF is automatic and allows up to three members of staff to use the SRF as part of the £75 per year school membership (it used to be £250 + £50 for the SRF tool!!). We are also hoping that there will be a number of half day events during the year, around the UK to introduce schools to the SRF who haven't met it before, or whose access has lapsed over the years. The first events are in Durham and Newcastle in March.

The advent of the DfE's Ed Tech Strategy earlier this summer has again focussed attention on technology in schools after a ten year famine of interest. It should be noted that there is now a strategy which is a considerable step forward in providing support for schools, regardless of individuals' views about the content of the strategy itself. The underlying need for schools, in order to get the best out of the strategy, is to understand 'where they are' with using the technology in their school, how staff and pupils adapt to changing situations, and is everybody safe. Of course, the easiest way to do that is to use the Naace SRF online system!

Why not join the journey and benefit from using the SRF, and, of course, help plot its next 21 years!

Thanks to the SRF Writing Group that included Allison Allen, David Whyley, Simon Shaw, Anthony Hunt, Mike Hamilton, and Steve Johnson.

Resources

You can find the current paper copy of the SRF (free) and support documents at:
https://www.naace.org.uk/naace-srf-guidance

You can also find the online system for the SRF (available to Naace Advocate or school members as part of their membership) at: https://www.naacesrf.co.uk/

Stunning facilities put UTC students ahead of the game

Sally McKeown

'A significant proportion of engineers in the UK will be reaching retirement age in the next ten years,' says Stewart Tait, Associate Principal of WMG Academy, Solihull, one of the most successful University Technical Colleges (UTCs) in England. 'There will be an acute shortage of engineers in the West Midlands and nationally, so this is a marvellous opportunity for young people.'

WMG Academy for Young Engineers has two UTCs, one in Solihull and the other at Coventry. Students can enrol at the Academy from the age of 14 and, while there is a broad ability range, they all have a passion to create and design.

UTCs are specialist schools and deliver technical education alongside core curriculum subjects. At the age of 16 students will take GCSEs in Mathematics, English Language, English Literature, Core and Additional Science (or triple science), plus OCR National in Manufacturing. They can also choose Engineering Systems and Control, Geography, Product Design, Art and Business Studies.

Profile

Sal McKeown is a writer and freelance journalist focusing on disability, education and technology. She is Commissioning Editor for Digital Learning magazine and is the author of several books Brilliant Ideas for using ICT in the Inclusive Classroom published by Routledge.

At KS5 the UTCs are selective. Students need to have good exam results and they go on to study A levels, BTEC or a mixture of the two. Many take the highly respected Level 3 Engineering Extended Diploma, the equivalent of three A-Levels. Alongside their chosen subjects, students can work towards the Extended Project Qualification (EPQ). They can also choose from a range of enrichment activities, including robotics, electric car building and racing, coding, and sports such as martial arts and table tennis.

Their students do exceptionally well. WMG Academy in Coventry is the best performing sixth form in the city and the only one to be rated 'well above average', a rating achieved by only 5% of schools in England. Many students go on to degree level apprenticeships with national and global companies. Their starting salary can be as much as £20,000 to £25,000, their tuition fees are paid and when they finish, they are not saddled with debt.

Engineering

The Engineering Hall in Solihull is remarkable. Its four different areas chart the progress from manual tool-making through to computerised, highly automated manufacturing. The students learn fundamental engineering principles but get a keen appreciation of the differences between manual and automated processes looking at quality, cost, speed and replicability.

The technology not only exceeds what is available in other schools but some is beyond the reach of many companies. They have a five-axis milling machine worth £90,000 and a CNC water Jet Cutter worth £80,000. Currently companies often outsource to get this technology, so WMG students are one step ahead, which makes them attractive as future employees.

Employability skills and business behaviours such as collaboration, problem solving and resilience are
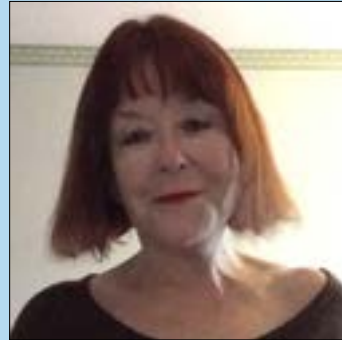
very much part of the ethos of the Academy. The competitive element with its emphasis on individual exam results seen in many schools, is complemented with a significant emphasis on teamwork. One of the early exercises involves machining a cylinder. Once complete, they work in a team of five, each making a component to form part of a fuel pump.

Just before Christmas the Engineering Hall featured a caravan chassis which was in the process of being transformed into a Santa Sleigh for a local charity. 'The last one the charity used was forty years old,' said Jason Kirwan, Head of Engineering, 'and we want to make sure this one is as good or even better.'

Working with industry

WMG Academy describes itself as 'business-like, business-led.' The pace is fast and intense. The school day runs from 8.30am to 4.30pm but it is not uncommon to find students still at work at 6pm. There is no school uniform as such, but they wear suits or smart clothing appropriate to a business environment. They are allowed - and even encouraged - to use mobile phones for research, and to organise their learning, just as they would at work.

Whereas other schools do theory and practical work onsite and have a short block of work experience, industry connections are a central feature at UTCs. WMG Academy has many prestigious engineering partners including Aston Martin, Jaguar Land Rover, Severn Trent, Rolls Royce, National Grid, ARUP, Bosch and Balfour Beatty among others.

These companies regularly visit the two sites to deliver sessions and set projects. They also work with students to improve their employability. From the very beginning students are expected to see themselves as young professionals with a clear understanding of how the business world works. There is intensive coaching in technical skills, communication, presentation and interview techniques. The aim is to turn young students into well-rounded, confident individuals as quickly as possible.

Real world work experience is a major focus: one of the students is engaged in cyber security and others are gaining experience in aerospace, TV production engineering, rail, chemical engineering and telecommunications. While the school allocates students in years 10 and 11 to particular businesses, in years 12 and 13 they are expected to research, identify and apply for their own placements. They need to become independent learners, take responsibility for their own work, make sure they do not fall behind and this is why EdTech is so important.

Efficient EdTech

IT Manager Graham Jacklin worked in mainstream schools before joining the UTC and it is his mission to make sure that all digital technology works smoothly. In previous positions he found senior management often lacked confidence in the technology and felt more secure if they had several IT people on site all the time.

There are 400 desktops for 365 students. The machines switch on automatically at 7:30 in the morning. The average logon time is 26 seconds and if a machine takes more than 40 seconds then it sets up an alarm and will be checked.

'Technology has to work fast,' says Jacklin. 'Students have 33 lessons a week for 39 weeks of the year. If you lose two minutes per lesson that is 43 hours, over five days a year of lost learning time.'

He is a great man for statistics: 'We have reduced printing by more than 50% so far this year. We spent £40,000 last year, mainly on resources for lessons. I worked out every student was taking

home two and a half boxes of paper in their rucksacks!'

He has been working with a company called North 27 and together they have introduced Guardian Update from Google and Progresso Cloud School. These are designed to make life easy for parents and students. Input an email address at the side of a student's name and the software will send out an invitation asking if they would like a weekly or daily update. It is a simple versatile solution as it will work on any technology and, instead of having a special password, they just use their normal phone or computer sign in, whether that be fingerprint, other biometrics or a passcode.

At the heart of WMG Academy's EdTech policy is Google Classroom. The advantage for students is that it will work on any device - mobile phone, laptop, home computer or Chrome Books so they can produce work wherever they are - at home, in college, while travelling or in the workplace. The college has a scheme to help students buy devices. There are 2 HP Chrome Books and 2 HP laptops to suit all pockets with a price range of £180 - £700.

Claire Carey, Computer Science Lead, is responsible for getting novice students from abstraction to computational thinking in year 10, to writing simple programs in Python and learning how to create networks. They also work on team projects such as building robots that can pick up blocks and build towers.

Where assignments are to be completed over a six week period, staff need to see at a glance who has handed in their work, where there is work in progress and where students have not even got off the starting blocks.

She believes Google Classroom is the ideal vehicle, especially for self-marking tests: 'These days the balance of my time is spent on teaching, not on marking assessments. The technology does that and then I will create a specific task or project for each student that will cover all the areas where they are weak.'

This approach also helps her cater more effectively for the most able, stretching and challenging them. 'Because our classes are smaller than in most schools, progress is very fast. Now I can call down tasks from the A-level syllabus for some of our GCSE students. They find these hard but I believe they are a good way to get them to consolidate and apply their knowledge and it also slows them down!'

It would be fair to say that on occasions UTCs have received a mixed response and commentators seem to have missed the point of this new style of education, but certainly the WMG Academies take young people and turn them into well qualified, highly skilled employees, capable of filling jobs not yet created.

Links
https://www.utcolleges.org/
https://www.wmgacademy.org.uk/

Addressing recruitment and retention issues

Professors Sarah Younie and Christina Preston, De Montfort University with Phil Blackburn, Chair of Naace

In this article we talk about how much we need each other in our general professional practice both in good times and in bad. This lockdown situation is certainly unprecedented but made more difficult by the circumstances that were impacting on teachers before this latest blow.

Groups of professionals working together have a long tradition as this started with the medieval trade guilds in England. In education circles, Wenger, DerMott and Synder (2002:4) interpret this phenomenon as 'communities of practice (CoPs)': 'groups of people who share a concern, a set of problems or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.'Naace is clearly this kind of organisation where members support each other especially when times are hard. We are now in uncharted waters with the lockdown of schools and many colleagues in Naace are rushing to collate resources for teachers.

But in 2016 the DFE acknowledged that there was a crisis of retention and recruitment (Younie and Preston 2016). The Guardian reported that nearly half of teachers planned to leave the profession within five years, because they were 'at breaking point', listing pressures such as: increasing bureaucracy around the recording of pupil progress; the need to keep data related to staff performance; and increased time devoted to marking (Lightfoot, 2016). Another journalist, Seith, suggests the same challenges are still there in 2019. The emotional strain of this situation cannot be underrated.

So in 2019 Younie and Preston surveyed the ITTE and The MirandaNet Fellowship members to publish a consultation report for the Department of Education (DfE) on how members of professional EdTech organisations could make teachers' lives easier and so improve the recruitment and retention situation. Naace members were included in the data collection. Amongst other suggestions, the members of these professional organisations strongly recommended colleagues to join a professional community of practice whether it was international, national, regional or local.

Teachers' stories

In response to the reported pressures, we also asked teachers on our Masters programmes for their experiences as well, because those classes were a place where teachers were part of a supportive community of practice which was not their school and, therefore, provided objectivity (Younie and Preston 2016). This research was illuminating because it revealed the human cost of systemic pressures in the system.

Only the most committed of teachers undertake a Masters on top of a full-time teaching post and yet one of the primary teachers (on a cross-phase Master's in Education course) instigated a discussion about burnout by recounting the moment he realised he was, to directly quote, 'beyond exhausted'. This teacher reported he had been invited to take his primary class to meet the Minister for Education and present their work. The teacher's normal reaction would have been one of excitement at the opportunity for his class to engage with a national public figure. Instead, he said, 'My heart sank and I just thought – oh no, just another thing to do, on top of all the other things I've got to do'.

This primary teacher recalled it was at that very precise moment he suddenly realised all the joy in his job had been squeezed out of him. He reflected, 'I work really hard preparing and teaching my class, I run the after-school football club, I go the extra mile, prepare for school productions, but I am approaching burnout'.

This moment of honesty and reflection from a teacher in his twenties inspired his peers in his Masters class to share their stories, which ranged from early years practitioners to primary/secondary school teachers and further education/higher education lecturers; all committed educators who wanted to enhance their professional practice. Yet their stories were strikingly similar. Another MA student, who was a secondary teacher identified the areas that were worrying him, including the expectations of Ofsted, analysing assessment data, lack of CPD, clashing and crashing computer systems and poor school funding. A FE tutor added the stress and strain of managing the job with the lack of resources, as well as marking and having to complete lesson preparation every single weekend and every holiday. At this point, the group realised that their experiences were not isolated to either the sector or phase in which they worked, but rather were deeply endemic across the education system - not isolated, one-offs. What was clear was that these dedicated professionals were so highly committed and motivated that they were undertaking a Masters in education despite excessive workloads.

The professional practitioners on the Masters continue in their endeavour to provide quality learning experiences despite these identified challenges. What is out of kilter, is an education system obsessed and defined by auditing metrics and performance data, such that it fails to acknowledge the human cost behind the figures and pressures of an accountability culture driven by targets and league tables. These are the realities, creating excessive workloads and causing the crisis in recruitment and retention; failing to attract and keep quality teachers.

Although the changes to the OFSTED framework from September 2019 were intended to shift the focus to 'the curriculum', this would not mitigate the need for performance data to be recorded and monitored for every pupil going forward. With the curriculum focus of the revised OFSTED framework (2019), data collection was intended to become less onerous, with possibly two data collection points a year. But the workload required to meet the new OFSTED framework, whereby the intent, implementation and impact of the curriculum has to be fundamentally rethought, has generated as much work as before, and, possibly in the early days, even more work as teachers wrestled with the new framework. It is likely that there will be requirements to record pupil curricular targets, which, whilst superseding numerical targets, are not likely to involve less work than previous OFSTED frameworks. Therefore, it is difficult to see how teacher workload is effectively being addressed.

One response was to increase teachers' access to support, including counselling, to cope with the demands of the job. But was this arguably only tinkering around the edges? This might appease the symptoms for a while, but it will not remedy the original causes.

The teachers on the Masters programme kept going, they said, because their Masters work put them at the centre of a like-minded group of committed colleagues with whom they could discuss their concerns and feel supported; they said it gave them a space to connect with a professional identity as a teacher and feel valued. Like an inoculation, the Masters course each week gave them a boost to their professional esteem - the class had developed into a supportive community of practice.

The value of professional communities
How much worse is the situation now? So many teachers are having to learn to teach online on the job and search for resources to support their pupils in lockdown.

If they already belong to a professional network this will allow these teachers to reach beyond their immediate educational establishment to build support, knowledge and resources with other profes-

sionals through dialogic learning, no matter what phase of education. There will be one organisation that will suit every teacher and it may be the best move a teacher can make in preserving professional sanity in these troubling times

The TPEA/MirandaNet membership's view was that membership of Communities of Practice (CoPs) could be very important in reducing stress. When there is an overloaded curriculum with excessive workloads, the greatest threat is one of losing a sense of worth as a professional, with an increased risk of tiredness and burnout that can lead to high rates of teacher attrition.

The members recommended joining an appropriate CoP offering collaborations where like-minded teachers can support each other. Many CoPs, like Naace, have spanned members' entire careers and over the years have provided the voice of professional reason in both face-to-face and online contexts. Groups in the community coalesce around shared interests and subject areas, which provide professional support. Interestingly digital technologies also support these groups through the innovative uses of social media, such as Twitter, Google discussion groups and online blogs. As Hynes and Younie (2018:156) argue, these 'are fast and effective communication channels, which inform teachers of evolving [practices], often written by teachers to share and disseminate ideas with other teachers.' These are also referred to as personalised learning networks (PLNs), which enable teachers to reach out, support and learn from one another. The need to reach out can be forgotten in an academic approach to issues like workload, recruitment and retention. There is a danger of sanitising the pain that conscientious teachers suffer when they are not able to do all that has been unreasonably required of them.

What resources are available for teachers?

Teachers do not always know what is available to them from professional organisations and, since the academisation of schools and the pressures on time, it has been harder to reach them.

Naace is a community of teachers, school leaders, advisors, consultants and commercial partners working across all areas of UK education, who share a vision for the developing role of technology in education. As a professional association, Naace represents the voice of the UK education technology community in the schooling sector at a national and international level. The members support individuals and groups throughout the UK education landscape by providing resources for courses and research, and encouraging reflection and professional development.

Naace members and sponsoring partners work in both public and private sectors. They represent a range of professions in the education sphere including teachers, school managers, curriculum leaders, lecturers, local authority advisors, independent consultants, software developers and designers, sales personnel, technicians, student teachers, company managers, national partners and colleagues from commerce and industry. They share a passion for embedding the effective use of technology into teaching, learning and school management.

As a result of this work Naace has developed and continues to support a number of initiatives and schemes shared with schools and partners:

- The Advancing Education Journal (this publication), with editions going back to 2009
- The Naace Self Review Framework (see earlier article) that can, if schools wish, lead to the award of the NaaceMark.
- The NaaceMark Award

- The Third Millennium Learning Award (3MLA)

Naace also supports its members and others through:

- practical information, resources, support and guidance to members, sponsoring partners and UK government departments on current topics relating to education technology

- supporting networking opportunities for members from schools, academy chains, local authorities, the IT industry and UK government agencies

- engaging in consultations at local, regional, national and international levels

- providing a range of professional development opportunities

The MirandaNet website has archives of teachers' publications going back to 1994, which also provides a research-informed evidence-base that other teachers can harvest and build on. In addition, teachers and trainee teachers can also gain awards with this community of practice for sharing their research and practice in the case of short articles, blogs, talking heads, conference presentations and delivering practitioner workshops. This is a practice that TPEA promotes and is one that other professional subject associations may wish to develop to support teachers, to address career development and improve longer-term retention.

Access to research in a form that is easily digestible is also a challenge. The MESHGuides Organisation has provided scholarships for professionals to work on developing research summaries, which are also updatable going forward. These are developed by teachers and researchers working together to support evidence-informed teaching. The MESH translational research initiative is at the beginning of a long journey of pooling, sharing and testing our collective research-based knowledge for the teaching profession. Educators from 191 countries are reading about, using and contributing to the MESH system.

MESH provides an online sustainable system using resources already in the education system to generate, quality assure and update evidence-based research summaries written for teachers to inform their practice. Giving teachers access to the knowledge-base of their own profession empowers teachers to make informed judgements. Teachers can engage in and reflect on research relevant for their practice in ways that enable them to translate research for their own context, in order to enhance and improve their classroom practice. By giving access to research knowledge, teachers can be re-professionalised in ways that acknowledge their professionalism and ability to take responsibility for addressing the teacher standards relating to continuing professional development.

Through practice-based research in the classroom, EdTech company representatives can also engage in learning, which in turn will raise the quality of thinking in this area. Companies working alongside teachers through small scale school-based research projects provide teachers and their leaders with in-classroom opportunities to reflect, often with the involvement of pupils and parents as well. The DfE could work with these companies to ensure that they are focussed on addressing the issues of teachers' workload, recruitment and retention and could support small-scale projects to evaluate potential impacts.

Conclusion

We are active in four EdTech professional associations that give us much solace. But we make no claims for easy solutions or quick technological fixes for difficult problems. However, the conclusions we drew from the TPEA/MF members' report to the DfE, that we have covered in this article,

suggest that there are opportunities to make more effective use of technology to support teachers and reduce retention and recruitment issues. This will take time to implement and evaluate and will require an agile approach to educational innovation that is dynamic, interactive and responsive to an alignment between solution and problem.

Links

The organisations for:

Information Technology Teacher Educators (www.itte.org) now The Technology, Pedagogy and Education Association   (tpea.ac.uk)

MESHguides   http://www.meshguides.org/
MirandaNet Fellowship   mirandanet.ac.uk
Naace   www.naace.org.uk

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Meeting the current situation

Tackling the corona virus crisis: teaching children to protect themselves

Dr Sarah Younie, Professor of Education Innovation, De Montfort University
Katie Laird, Associate Prof in Microbiology and Head of Infectious Diseases
Sapphire Crosby, Research Assistant on Germs Journey Project and PhD student

Focusing on The Germ's Journey

Sometimes an idea emerges at just the right time. But when our interdisciplinary UK research team started to develop A Germ's Journey educational resources a couple of years ago, we could not have known how vital these resources were going to be.

Our aim was to engage children in the Early Years Foundation Stage (EYFS- 3-5 years of age) and aid their understanding of germ transmission and infection prevention through the use of specifically developed interactive learning resources. The resources include a book and website (www.germsjourney.com) alongside a set of interactive workshop activities. Activities include reading the interactive book, playing the web-based games, colouring in germ illustrations, singing a hand washing song, and a hand washing activity, where children are given glow-in-the-dark gel to rub on their hands. The gel represents germs and reinforces the concept of the invisible germ as they can only see the gel with a UV light. The children then wash their hands to see whether their hands are free from the gel/'germs'.

The first workshops were conducted with EYFS classes in Leicestershire. Results found that the developed learning resources were successful in aiding children in EYFS's knowledge of germs and re-

lated health issues. 80–100% of parents and teachers were strongly agreeing on the positive impact. Teachers in particular were reporting an increased understanding in their pupils since participating in the workshops.

Workshops were set up to help EYFS practitioners in Leicestershire spread the information. 1,000 books, supported by a Society for Applied Microbiology (SfAM) Educational Grant, were donated to schools across the UK. As a result, workshops have been held for approximately 400 children and 55 teachers so far.

Following a study that evaluated the impact that the Germ's Journey resources had on children's understanding of germ transfer, our De Montfort University multidisciplinary research team with a background in Microbiology, Education and Psychology are investigating how the resources can impact hand washing behaviour/practices and germ awareness in young children under eight years. Carousel workshops using the Germ's Journey resources have been carried out in EYFS classes in primary schools across Leicestershire. The results have found that children who participated in the Germ's Journey workshops showed an improvement in their handwashing practices and knowledge of germs, both immediately after the intervention and during a follow-up study one month later.

Also in the UK, culturally relevant resources including hand washing posters in a variety of languages, a hand washing song/video and an interactive game have been developed in collaboration with the Thinktank Museum, Birmingham and are currently displayed as part of a specifically designed permanent STEM exhibition there for children aged 3-8 years. The handwashing song/video was specifically developed in collaboration with the education officers at Thinktank, professional musicians and pupils from a local primary school. The song/video has been created for use in Thinktank's toilets, in order to improve children's understanding of hand washing and encourage correct hand washing practice.

Gujarati Book

In England we have been able to use digital resources but we have had to adapt to the limited access to the internet and computers in the other countries we have worked in. We have however found ways of extending our international outreach in countries where knowledge about hygiene is greatly needed.

In India the teachers have worked with approximately 524 children and 155 teachers and approximately 40 children and 37 teachers have participated in Germ's Journey Workshops. More delivery is planned. Train-The-Trainer workshops have also been conducted with Ahmedabad, India, Makeni and Sierra Leone in order to support the teaching of hand-hygiene and demonstrate how the resources can be used in their own practice.

As a result of feedback on the resources from teachers in Ahmedabad, a culturally relevant Gujarati version of the book, 'A Germ's Journey', was co-created alongside teachers and local organisations in Ahmedabad. To date, The Germ's Journey research team has conducted workshops with 624 children and trained 216 teachers. After our donation of 900 culturally relevant Gujarati books, and the training of the teachers, the charities continued to implement the GJ intervention across the State of Gujarat. To date this has involved 200 schools receiving books/teacher training, with 5,207 children being taught health-hygiene via Germ's Journey. This work is ongoing.

Feedback from the teachers was very positive, with 96% of the teachers stating that the workshop had increased their confidence to teach microbiology/handwashing in schools and 98% stated that it was useful to them. In all, 100% stated that they thought that their pupils' handwashing practice

would increase after they run the workshop themselves. Additionally a baseline assessment and identical post-workshop assessment were completed by the children who had used the Gujarati book. The findings revealed that 54% of children had an increased understanding of hand-hygiene. The children taking part in these workshops were from areas of severe deprivation and had limited access to education and thus literacy. Therefore, increasing children's understanding of germ transfer and hand-hygiene by 54% was a significant result.

In February 2020, The Germ's Journey research team returned to India to hold focus groups with the teachers to evaluate the impact of the resources. Last month's focus groups found that, of the teachers receiving the Germ's Journey resources, 100% reported that they are now able to teach handwashing and infection control more regularly and effectively, increasing children's understanding. This has resulted in better handwashing behaviour and reduced illness within the children. Teachers reported that children grasped the concept of the invisibility of germs due to the images in the book. The children also disseminated that knowledge more widely to their parents, siblings and wider community. Importantly, teachers reported a reduction in children having illnesses associated with diarrhoea and vomiting.

The commitment to this development of the Guajarati books through a variety of traditional and innovative funding routes should not be overlooked. The reach of the project was extended by the generous donations from individuals via Crowdfunding and sponsorship by PAL International, Q Shield, Manav Sadhna, 3pl Real Estate, Little Poppets Nursery School Leicester, VSO, the Environmental Sanitation Institute (ESI), Thinktank Birmingham Science Museum and SfAM.

A resource for West Africa
Following a research trip to Makeni in Sierra Leone, the Germ's Journey team have worked collaboratively with the University of Makeni (UNIMAK) and local teachers. Members of the executive board at UNIMAK have expressed interest in developing an on-going research study by partnering the process of co-creating a culturally relevant Germ's Journey book and resources for Western Africa. 1,000 books will be delivered to Sierra Leone early 2020 in order for UNIMAK to distribute to schools in the area. Workshops were conducted to support local teachers in their teaching of disease, germ transmission and hand-hygiene. In addition to this, focus groups were conducted as part of a scoping exercise in order to establish the teachers' current teaching methods and resources. The data from this exercise provided valuable information for the Germ's Journey team. Teachers who attended the workshop were provided with specifically developed Germ's Journey learning resources to use in their schools which were well-received. The Germ's Journey team intends to work collaboratively alongside UNIMAK to conduct a follow-up study, to determine whether the book is successful in aiding the teaching and learning of germ transmission and hand-hygiene. Meetings with the Education Minister and Director for the new Teaching Commission in Sierra Leone resulted in discussion about Germ's Journey being included in the teaching curriculum.

Where next on the journey?
Germ's Journey Soaper Heroes are a set of hand-hygiene resources centred on superhero type characters. These will be implemented on paediatric wards, and evaluation of pre and post handwashing practice and understanding of germ transfer will be conducted. The educational intervention will involve children receiving a box containing handwashing products and accompanying health-educational resources. The box will contain anti-bacterial hand wipes, anti-bacterial hand gel and soap all manufactured and provided by the project's funders PAL International. Alongside the products,

specifically developed educational resources including stickers (as part of a reward-system style sticker-chart), a colourful zine (a small booklet that unfolds into a flat poster), containing information about germs, will be included. The study is set to commence later in 2020.

But how could we have known that our work would turn out to be so valuable in fighting Covid-19? Thanks to digital connections we are able to continue despite the lockdown. We hope there will be funds for research into what resources can help in the future. Perhaps forewarned - we will never be so unprepared next time.

Get in touch with me for more information: syounie@dmu.ac.uk

The Germ's Journey link is here:

https://mirandanet.ac.uk/coronavirus-and-a-germs-journey-international-projectcoronavi-rus-and-a-germs-journey-international-project/

More resources for dealing with the lockdown are here

The link from our resources page is here:

https://mirandanet.ac.uk/resources-for-learning/

(Illustration 'pdf Soaper Heroes)

Professor Sarah Younie

Dr Sarah Younie is Professor of Education Innovation at De Montfort University and been involved in international research on educational technologies and teaching for 30 years. Prof Younie's work covers digital technologies in educational settings for UNESCO, EU, UK Government Agencies, Local Authorities, educational charities and Ed tech companies. Prof Younie has undertaken commissioned research for DfE Training and Development Agency (TDA), Becta, BBC, HEA and JISC.

She has worked as a teacher and researcher in secondary schools, universities and as UK Chair of the national subject association of IT in Teacher Education (ITTE) she has conducted national research, including gathering evidence for the Parliamentary Select Committee Inquiry into Education. Prof Younie is the Director of Research for Mirandanet, which undertakes research on the use of educational technologies with IT companies, producing evaluation reports for commissioned research.

Having published widely on educational technologies, she is currently the Editor-in-Chief for the international Journal of 'Technology, Pedagogy and Education' published by Taylor Francis. Prof Younie's books include 'Teaching with Technology: the essential guide'; 'Debates in Computing and ICT'; 'Teaching and Learning with ICT in the Primary School'. Prof. Younie is a founder member of MESH (Mapping Education Specialist knowhow) project, providing research summaries for teachers, and represents the project as a panel member of the UNESCO Teacher Task Force, also sitting on the 'ICT' subgroup. Prof Younie is an invited member of ICET (International Council on Education for Teaching). My university profile is here:

https://www.dmu.ac.uk/about-dmu/academic-staff/health-and-life-sciences/sarah-younie/sarah-younie.aspx

Saphhire Crosby

Sapphire Crosby is a PhD Education student at De Montfort University. She has a BA (Hons) in Education Studies and an MA in Education Practice. Working alongside the project's Co-Founders, Sapphire's PhD research focuses on the co-creation of interactive hand-hygiene educational resources ('A Germ's Journey') and the evaluation of their impact on children's understanding of germ transmission and handwashing practice.

Dr Katie Laird

Dr Katie Laird is a Reader in Microbiology in the School of Pharmacy and Head of the Infectious Disease Research Group at De Montfort University. She has a BSc (Hons) in Biology and obtained a PhD in Applied Microbiology in 2008.

During her PhD she developed and an essential oil based antimicrobial vapour, whilst her postdoctoral work included the assessment of natural products antimicrobial efficacy against post-harvest pathogens.

Katie's work on the prevention of transmission of Healthcare Acquired Infections (HAIs) is recognised internationally. She specialises in textiles as a transmission route for infectious disease, with a particular focus on healthcare laundry working closely with the NHS and Industry. Other research areas include the development of natural products for the use in the pharmaceutical and cosmetic industry. Katie is co-founder of "A Germ's Journey Educational Resources" an initiative that teaches young children globally about health hygiene in particular the importance of handwashing to prevent the transmission of disease.

Subject associations respond to surge in demand for home learning support

The Council for Subect Associations

Subject associations are experiencing a surge in demand for practical resources to support home learning as schools close to all but the children of key workers and move towards online teaching in the wake of the coronavirus pandemic. In response, the UK Council for Subject Associations (CfSA) has created a new on-line directory of organisations to guide parents and education professionals in need of specialist resources and support across all subjects.

Following calls from teachers, parents, and the UK Government, subject associations have tailored hundreds of pupil resources for use by parents as standalone materials while retaining links to wider learning programmes. Some of these were made available via BBC Bitesize and other BBC channels on April 20. Meanwhile, associations are providing advice and support to thousands of schools and other education institutions around the world.

In recognition of the need for better information about the support and resources available to heads, teachers, Governors, Initial Teacher Training providers, newly qualified teachers, and other educationalists, the CfSA has also created a comprehensive directory of members and other organisations.

The directory brings together details of 25 subject associations as well as other organisations ranging from the National Association of Head Teachers to the National Governance Association. It details how each organisation assists practitioners in every subject taught in the classroom and supports provision in schools and lists the type of help and professional resources available and how to access them.

Chair of the UK Council for Subject Associations, Associate Professor Andy Connell, said: "Subject associations have responded rapidly to write and create resources that can be delivered at home by parents. This enormous surge in demand for specialist educational support and advice reflects the immediate need for content and expertise to provide the best possible education to children and young people at this challenging time.

Heads, teachers, Governors, parents, and others need access to quality materials and support from a community of specialist experts more than ever. The challenge is finding this information quickly; the CfSA Directory provides instant access and a huge amount of signposting."

Longer term, the CfSA is working with its members to address the poor retention rate in the teaching profession by providing teachers with access to support via like-minded professionals.

Andy Connell adds: "Around 40,000 teachers – approximately nine per cent of the total workforce – leave the profession every year. We often encounter newly qualified teachers who are unaware that the subject associations exist and that they can provide specialist knowledge resources, support, help, and a listening ear. Their mission is also to keep their finger on the pulse of what is going on in their subject, so they are the best way of staying up to date on the latest knowledge.

"Anecdotally, we hear of teachers who leave the profession because they are the only subject specialist at their school and are struggling with subject knowledge and confidence; they feel isolated and out of their depth and are surprised to learn that expert support was available to them."

The new Subject Association Directory is available at:www.subjectassociations.org.uk/the-cfsa-directory

A consolidated guide to home schooling resources is available at:

www.subjectassociations.org.uk/cfsa-response-to-covid-19

The CfSA directory also acts as a resource for Government officials looking for sources of specialist, expert advice from officially recognised subject organisations.

Free resources ready now

Rob Ellis: MirandaNet web editor

What follows is a brief overview for Naace members of what might be available to educators for free. I have long been a fan of free information, free apps and free software. In fact, I think the only things I have ever paid for have been Microsoft Office with OneDrive and an app that made green screen films on an iPad. It was £2.36! This takes some work but I think it is worth it.

Recently, with so many children off school because of the coronavirus, I have added a page to my website (click here) to help parents find suitable material for their children while they are at home, without the parents themselves actually having to become teachers. One thing that quickly became quite clear as I researched is that much of the national curriculum, while very worthy, is not actually any more essential than other information that constitutes valuable learning and is not included. In addition, the idea that content is designated for a particular age also now seems odd. Can you imagine a child saying how interested they are in the First World War, for instance, only to be told they will have to wait a few years before they are allowed to learn about that?

The resources I have supplied I have picked myself but the first thing that occurs to me is that whoever is looking for information about their project or their children's project needs to know how to search. How many of us just type the keywords that come to mind into the search bar and then look at only the

Rob Ellis

Rob has wide experience in education having been a teacher for 30 years leading mathematics, history, computing, data management as well as pastoral care for 100 children. At one point these responsibilities were simultaneous. He even had one very happy experience of Ofsted!

Amongst other things he has an MSc in computer based learning and training and a diploma in mathematics education (with distinction).

While teaching and working for his LA as Educational Transformation Project Manager and advisory teacher for mathematics he worked on a number of national research projects before forming his own company working with schools, local authorities and private companies in the education sector. Today he is still self-employed and does a lot of online safety work as a CEOP Ambassador.

His main interests include how education can transform to meet the needs of a new century and on a more immediate level digital storytelling as a way for learners to demonstrate their learning. He has also been long interested in the aspects of digital literacy that have become known as 'fake news'. More recently he has been looking at reviving the idea of using programming to enhance mathematics as it was back in the 1980s with the BBC micro.

results on the first page? To this end the first stop might be a short course of lessons by Google on how to search effectively and safely (click here). Having used the word 'safely' it brings us straight into the thorny issue of digital literacy. It is probably true to say that before using the web to find information or to communicate we really ought to learn about how to do so safely.

On the theme of digital literacy it is important to understand that technology is developing at an almost exponential rate. Little point in becoming stuck in the present when in a trice it will be the past. More important is learning something about how to find out who created a site, what it looked like

in the past and who links to it. This last can be achieved by typing link:domainname into the Google search bar. The results will be sites that link to it. Some useful and free URLs can be found in the appendix below. There are also websites that focus on the accuracy of other sites.

As well as the accuracy of information, thought also needs to be given to copyright and the application of face-to-face norms in a world where the participants' identity might not be verifiable.

However here is not the place for a detailed discussion on the issue of safety, rather an acknowledgement that it is vital, underdeveloped by many users but with a rich resource of free material.

There seem to be a number of different sorts of software, websites etc. that are free and it might be helpful to use some simple classification. There are software and websites to communicate, software to create, websites that provide information and websites that provide courses and activities.

Communication
- Email
- Social networks
- Discussion forums
- Learning environments (e.g. Google Classroom)

In school terms the above enhance pupil/pupil/teacher interaction and provide an 'anyplace, anytime' basis for curriculum organisation, teaching and learning and record keeping.

Creation
- Art
- Websites
- Documents
- Presentations
- Films
- Virtual field trips

Pieces of writing are valuable as students move towards traditional exams but the above are all useful and motivating ways of demonstrating learning and can be used across the whole subject range. Writing on paper will continue but I already know adults whose handwriting has deteriorated into illegibility as they rely on electronic communication and creation.

Information
- Virtual field trips
- How to' and support
- Websites dedicated to specific events and organisations
- nformation sources (e.g. Wikipedia)

This is where variety is arguably widest and becoming much more than simply an online reference book.

Courses and Activities

- Worksheets
- Whole courses
- Short tasks

Some supplement other resources and some offer complete courses but few offer individualised human interaction. For examples of the latter two categories see the link to my website above or the list below. However, there is one vital component not mentioned: teachers. The nature of the three categories above is different from their predigital ancestors. I would hypothesise that the pedagogy must also be different. For example, much of the content lends itself to exploration and discussion rather than exposition and is renewed and improved (or otherwise) at an almost exponential rate.

Thus far though no effective strategy to develop capability has been put in place. First, though, capacity has to be available. It is too important to leave it to a relatively small number of enthusiasts to develop use in isolation. When use of free software/apps/information becomes widely used in a way that responds to the objectives of teachers I expect an exciting and motivating curriculum.

Examples of free resources (as of 20/04/20)	
Parent Info - online safety	Virtual field trips
Math Aids - Worksheets	Graph Sketch
National Geographic for Kids	Graph Sketch
British Pathe - historical news videos	Python for beginners
NASA	Quizizz
Explore the London Blitz	Young People's Trust for Environment
NRICH - Maths for all ages	Maps then and now
Crunchzilla - learn some javascript	Visit the Houses of Parliament
The National Archives	Third Space Maths Hub
Into Film	The National Trust
Khan Academy	litfilmfest
The Film Space	The Scouts
Programming for beginners	World Wildlife Fund
Africam	Isle of Wight Rifles
Scratch resources	We Are Teachers
Tate Kids	Learning Resources
Barefoot Computing	Britain From Above
ThinkUKnow (CEOP) = Home activity safety packs	ThinkUKnow (CEOP) = Home activity safety packs (Update)

Appendix (This is not a definitive list, rather a sample.)
https://youtu.be/TwtS6Jy3ll8 Internet growth
https://youtu.be/aDycZH0CA4I Online behaviour offline
https://archive.org/web/ Find out what a site used to look like
https://www.snopes.com/

https://creativecommons.org/about/

Open Content Toolkit

A new resource developed by Theodore Kuechel

I am currently curating an online resource; The Open Content Toolkit which shares contemporary

and historical online open-content media resources or assets from around the world. These include images, maps, documents together with audio and media files. It is a vast collection, numbering in the millions.

All resources use various open licences that offer teachers and students tremendous opportunities to include unique high quality primary source material in their teaching without infringing copyright. Not only for the purposes of illustration, but also as a resource to be used in a many different and creative ways.

The toolkit provides examples and advice for using them. The tookit is organised into categories and it covers areas including copyright, search tools and techniques, remixing and digital and media literacy. Start exploring the toolkit here at the Welcome to the Open Content Toolkit page.

Looking forward

Pedagogy and the New Web Contract

Professor Mike Sharples, Emeritus, Open University

"English scientist Tim Berners-Lee invented the World Wide Web in 1989." That's what it says in Wikipedia.

Well, actually, it wasn't quite like that. In March 1989 Berners-Lee submitted a proposal for a system that put together the main components of the web: web pages, links between the pages, universal address for resources, web browser.

But that was based on an earlier project of his called Enquire to search for resources online, which is where Berners-Lee first used the term "Web".

And that was based on the concept of hypertext which was invented by Ted Nelson, an American computer pioneer, in the 1960s.

That in turn was based on the concept of a Memex to connect pages of information, proposed by the American scientist Vannevar Bush in 1945.

Which in turn was inspired by the Encyclopedia Britannica, which was influenced by Diderot's 18th century Encyclopédie. And so on. And so on.

The point I want to make is that an invention as fundamental as the World Wide Web doesn't spring fully formed into the mind of the inventor. Berners-Lee himself put it like this: "The Web arose as the answer to an open challenge, through the swirling together of influences, ideas, and realizations from many sides, until, by the wondrous offices of the human mind, a new concept jelled. It was a process of accretion, not the linear solving of one well-defined problem after another."

"Swirling together of influences", what a lovely phrase.

That's the genius of invention – to see how resources that already exist can be made to fit together in new ways. There's a word for it: "bricolage". Bricolage is creative play with materials that are ready to hand to create something new. (pdf) In the case of the World Wide Web, not just new but powerful and expansive.

I also mentioned that the World Wide Web was based on an earlier project from Tim Berners-Lee, a full ten years earlier. He called that project Enquire and it linked together pages of information across different computers. Here's another key concept: "persistent intent". It takes time to develop something that changes lives. If anyone tells you that their company has just invented a wonderful new gismo that will transform education, then I suggest you cough politely and walk away. It doesn't work like that.

Bricolage and persistent intent are at the heart of all innovation. So why focus on invention of the web in particular? Because it also demonstrates the power of networking. When he developed the World Wide Web, Tim Berners-Lee was working at CERN, the European Organisation for Nuclear Research. It was, and still is, one of the most networked organisations in the world. Scientists visit CERN from all over the world to share ideas and work on joint projects. Berners-Lee knows the importance of networking, and the need to create powerful tools to share ideas.

He developed the World Wide Web to do that. It was also part of his genius that he made the web open to all, rather than patenting and protecting his ideas. What a superb concept – a dynamic web of ideas and resources, open to all.

So what went wrong? Why have we reached the state where around 30 per cent of worldwide internet traffic is porn. Where schools put up firewalls to protect students from undesirable web influences and online bullying. Where the dark web hosts sites that sell all manner of drugs, guns, counterfeit money, stolen subscription credentials, hacked Netflix accounts and software that helps you break into other people's computers.

We have, in our pockets, devices that can access the entirety of information known to humankind. And we use them to look at pictures of cats and get into arguments with strangers.

The founding strength of the web – its openness and accessibility – is also its downfall. It means that companies can exploit that openness to peddle smut and junk. It means that we can fire off a response to a tweet before we've thought whether it's wise to do so.

But… let's be positive. The World Wide Web is no more and no less than a giant interconnection of people and computers. And people can be networked together in many ways, to serve many purposes.

Some influential people, including Berners-Lee have devised a Contract for the Web, a set of nine principles for a more humane World Wide Web, to hold Governments and companies to account when they fall short.

Others are attempting to refashion the web in a more decentralised way, so that governments and companies don't control who sees what and who says what.

Still others are putting education, ethics and trust at the centre of IT innovation, crafting tools for the web that support inquiry learning, shared knowledge building and consensus forming. The World Wide Web offers new possibilities for learning through conversation and collaborative inquiry. At

The Open University I have been working with the BBC and other partners on an open web platform called nQuire, for people and organisations to run big scale investigations into themselves, their communities and their environment.

The key is to let pedagogy drive the innovations in education, not technology. We are discovering new and powerful ways to teach and learn, such as spaced learning, crossover learning, design thinking, dynamic assessment, threshold concepts, teachback, translanguaging. There's a wonderful swirling together of positive influences on education from research and innovation in the science of learning. We have the opportunity to build not just a more humane web, but a more educative one.

If the new web is to meet the needs of diverse cultures and communities, then more people need to be involved in developing it. That's where Naace, TPEA and MirandaNet can make a huge difference because they have been networking with teachers, EdTech developers and policy makers for over 30 years – building partnerships, influencing policy and practice, developing capabilities of teachers, and working with companies to build tools based on good pedagogy.

Now, as a unified organisation, the professional organisations face a big new challenge – to help build the World Wide Web for education. The people working on projects for a more humane and decent web sorely need the contributions of all the EdTech professionals. I hope Naace, MirandaNet and TPEA can be at the centre of efforts to add pedagogy to the web, alongside openness and accessibility. We are the people who understand pedagogy. We know how to create new forms of learning through conversation, new ways of knowledge building – and how to make them fun and engaging. Pedagogy founded on trust and ethics goes beyond the principles enshrined in the Contract for the Web to offer a new set of effective practices.

To add pedagogy to the web means taking a design stance. It means getting involved with the new "swirling together of influences" that could reshape the web. Naace, ITTE and MirandaNet are rightly proud of their distinguished past. Now they can look forward to an even more distinguished future as shapers of a new decent web for learning.

Biography: Mike Sharples

Mike Sharples is Emeritus Professor of Educational Technology in the Institute of Educational Technology at The Open University, UK and Honorary Visiting Professor at the Centre for Innovation in Higher Education, Anglia Ruskin University. His research involves human-centred design of new technologies and environments for learning. He inaugurated the mLearn conference series and was Founding President of the International Association for Mobile Learning. As Academic Lead for the FutureLearn company, he informed the design of its social learning approach. He is Academic Lead for the nQuire project with the BBC to develop a new platform for inquiry-led learning at scale. He founded the Innovating Pedagogy report series and is author of over 300 papers in the areas of educational technology, learning sciences, science education, human-centred design of personal technologies, artificial intelligence and cognitive science.

His recent book is Practical Pedagogy: 40 New Ways to Teach and Learn, published by Routledge

Can government, business, schools and families work together to craft a positive future?

Elizabeth Hartnell-Young The University of Melbourne, Australia e.hartnell@unimelb.edu.au
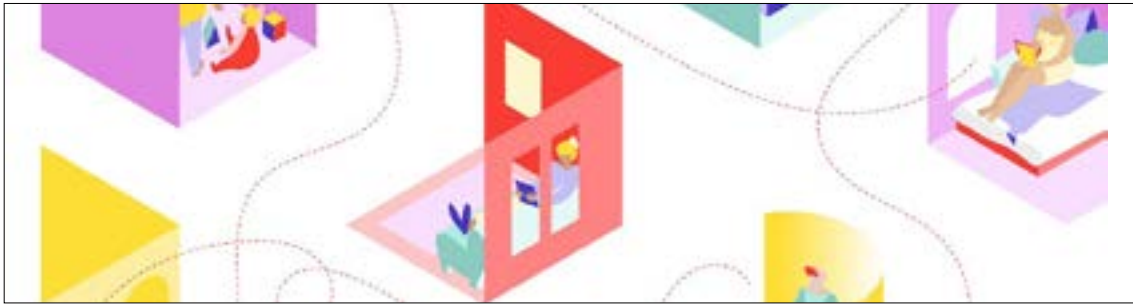
It is clear that comfortable patterns of relationships have been disrupted in society, and particularly in education.' I wrote this opening sentence before COVID-19 came upon us and catapulted us even further into a social experiment that involved schools in many countries going online and #learningathome becoming a new hashtag.

Ubiquitous technologies had already enabled a shift in power as learners now independently access information previously held and dispersed by teachers. Global communication networks have enabled knowledge sharing and collaborations across nations, opening up the world. Assistive technologies help to improve vision, hearing and touch. Artificial Intelligence helps people to live and learn. On the flip side, 'fake news' spreads swiftly on social media and people worry about cyberbullying and addiction. Surveillance is made easy, challenging the privacy and security of our movements and our data.

Although we might lament the slow uptake of policies and practices in education, technologies are pervasive in the twenty-first century. And to many, it seems that the time has come. Governments are scrambling to provide advice, devices and infrastructure to support learning at home. Some students are enjoying the experience, while others are missing their peers. Some parents are tearing their hair out, while others are pleased to be more involved in their children's learning. Some teachers are well-prepared and rising to the challenge, while others lack confidence in teaching online. So in a post-COVID-19 world, how are we to make the most of this social experiment and embrace blended learning? Who will wield power in this new world? Certainly not the technology itself. It is up to people to make wise decisions. But what is to be the role of government in the future learning ecosystem? Technology companies? Young people? Families?Let's look at technology companies. In their enthusiasm to sell to captive markets, they have lobbied and convinced education systems, teachers and schools to provide devices, infrastructure and software for every point on the learning journey. While there are many good news stories about access to and use of digital tools, the evidence is patchy in relation to academic outcomes. Notwithstanding their moral purpose, most, especially the large companies, are driven by the profit motive.

In Australia, laptop and tablet computers have been the most popular connection device for learning, unlike some other countries where mobile phones fulfil the same purpose. Teaching university classes in Indonesia, I have noticed that students are very adept at using the small format of the phone for a wide range of learning activities. My previous research also showed that secondary students and their teachers found numerous productive uses for these devices.

Governments across the globe have actively promoted technologies for learning, and have increas-

ingly supported 'Bring Your Own Device (BYOD)' policies. Recently, lobby groups including psychologists and researchers have argued that mobile phones can be disruptive in classrooms and open to misuse at school. According to the Victorian government 'the unregulated presence of mobile phones in classrooms can undermine students' capacity to think, learn, remember, pay attention and regulate emotion.'

In what seemed to be a knee-jerk response to a small lobby, the State Education Minister announced a ban on students using mobile phones in Victorian government schools from 2020. Similar to bans in France and in other Australian states, this policy was designed to prevent cyberbullying, as well as encouraging face to face sociability among students. Some schools have already implemented bans on all mobile devices with connectivity, and wearable devices must have all notifications switched off.

A school in Wales has claimed its total ban on pupils using mobile phones has improved exam results and behaviour. https://www.walesonline.co.uk/news/education/mobile-phone-ban-school-llandudno-16945279

As I noted in my report to Becta a decade ago, using technologies is a local class management issue, best handled at the school, not the government level. The Department of Education and Training (DET) claims the policy will remove a major distraction from classrooms, 'so that teachers can teach, and students can learn in a more focused, positive and supported environment.' Let's hope they don't have to spend a lot of time policing, as it is not actually a zero tolerance policy. DET acknowledges that when a student has been given explicit permission to access and use such devices to enhance learning by the classroom teacher, mobile phones will be permitted for that specific purpose. For a small number of students with particular health and wellbeing needs, an exception to the policy may also be granted.

Some schools have followed the DET guidelines closely:

Students who choose to bring mobile devices to school must have them switched off and securely stored during school hours. Secure storage is storage that cannot be readily accessed by those without permission to do so. Students are required to store their mobile devices in their lockers during school hours, and should ensure their locker is correctly secured at all times. Staff will confiscate the mobile device when seen or heard, and will issue a 1 hour detention via the online system.

I recently met with a group of Year 9 students from an outer suburban school, who found me, naturally, on the internet. They were prepared with a survey about mobile phone use for the general public, and a set of questions to ask me. They had already found my report to Becta, and read one of my recent blog posts.

As I had found in my research, the students listed numerous ways that mobile phones helped their learning, from linking with the school's learning management system to check timetables or receive updates from teachers, to using a hotspot to download data when the school's wifi was overloaded. They used translation software, photographed teachers' notes on the board, and frequently accessed search engines. They told me how mobile phones gave them a lifeline when they felt lonely and down, making them feel safe. While acknowledging that some people use technology for bullying, they felt this mostly occurs out of school hours.

When I visited the school, views were mixed. Many parents seemed pleased that the government was stepping in with a ban, while the Principal and several teachers were disappointed that their current productive management system was to be overturned.

And this is part of the problem. We live in a digital age, and curricula across the world encourage critical thinking and self-regulation. Small government encourages the public to take more responsibility. The Victorian Premier originally dismissed a ban on mobile phones, suggesting it was a school-by-school issue. He said, rightly, that on a matter like this, and many other matters, 'it is not for us to be directing schools.'

I'm reminded of a T-shirt from a technology conference long ago: 'resistance is futile'. Banning mobile phones looks like a last-ditch attempt to take some control, when what is really required is trust in people and support for local education and decision making about appropriate behaviours. As a MirandaNetter wrote, 'kids can use sporting equipment inappropriately but this does not lead to a state-wide ban on footballs'.

And then came COVID-19, when any connected device was a welcome addition to the resources for learning. Will this be a learning experience for all involved? Will governments be mature enough to review their bans? How are our education ecosystems gearing up to enable us all to make good, appropriate decisions in the context of this disruption and beyond? The question applies at all levels: class, school, community and nation. All players need to understand each other's goals, motives and capabilities, and to tackle these issues together. The future is in all our hands.

Acknowledgement: With thanks to Becta, Miranda Net participants and students of Keilor Downs Secondary College. Dr Elizabeth Hartnell-Young

Dr Elizabeth Hartnell-Young

Elizabeth is an activist, researcher, writer and presenter, with experience in Australia, Europe and Asia.

Elizabeth is an Honorary Fellow in the Melbourne Graduate School of Education at the University of Melbourne, Australia and a Visiting Professor at Universitas Negeri Yogyakarta in Indonesia.

A keen learner who has completed several MOOCs, she also designs, presents and supports professional learning for educators. As Director of the ACER Institute at the Australian Council for Educational Research, she led the registration, development and online provision of post graduate courses. She previously managed a large portfolio of projects relating to teaching and learning as Director of Research and Evaluation in the Victorian Department of Education and Early Childhood Development.

Her interest in physical and virtual spaces has led her to research the use of technologies and new learning spaces during periods of rapid development in these fields in England and Australia. She has written numerous articles and book chapters, and serves on several editorial boards including BJET.

From 2006 to 2008, Elizabeth was an international research fellow in the multidisciplinary Learning Sciences Research Institute at The University of Nottingham, where her particular interests were mobile technologies for learning, new learning spaces and large scale digital systems such as eportfolios. She was also an expert e-learning consultant for jisc in the higher education sector.

She is a member of the Board of the Skyline Education Foundation, and chair of its Futures Committee.

After the maelstrom ...an EdTech Company Response

Graham Newel IRIS connect

Let me start with a homage to so many people in so many sectors who are working so hard to keep everyone safe. The remarkable efforts of ordinary people doing extraordinary things has left me humbled. This includes, of course, the teachers who are keeping schools open for vulnerable pupils, supporting families and children remotely and those who have shown agility and commitment in developing resources for pupils and learning new skills to do this.

Yes, these are unusual times and this is not a usual article for this journal.

At this stage we don't know whether school closures will be short, medium or longer term or whether this is the first of a series of clo-sures as infection rates have second or third peaks. Another possibility is, when schools do reopen, it will be for full time attendance or a blended part-time approach to keep class sizes smaller. However, as has been often said, we are all in this together and that includes teachers, schools, academics, researchers and the EdTech industry.

Graham Newell

Graham is the Director of Education for IRIS Connect which he helped to establish in 2008. Graham has worked in education for over 30 years as a teacher, lec-turer, headteacher and senior officer in a number of Local Authorities. One of his key interests has been to improve the quality of professional development and has taught everyone from mid-day supervisors to Masters Level students at university.

IRIS Connect has seen growth and currently works in 20% of English secondary schools and an ever growing number of primary schools. The company has expand-ed into 13 other countries in Europe, Australasia and North America. It is proud of its active involvement in a number of research activities and national/internation-al projects.

At the core of this article are two questions: How can we, as professionals in an educational technolo-gy community, support schools to recognise and develop best practice? Can we, if we work collabora-tively, create positive and sustainable changes?

An EdTech companpy response

In this article I would like to set out how one company involved with educational technology, IRIS Connect, has responded. We would genuinely like constructive feedback and suggestions. It is a request for a genuine knowledge exchange so that we can all drive forward constructively.

As someone who held a number of senior roles in education before I joined IRIS Connect, I can honestly say that, whilst all the organisations I was involved with planned for emergencies, there was no contingency planning for something as disruptive to education as COVID-19. It is important that we recognise this lack of planning because, as a consequence, there has been little consideration of a change management process for sustainability. Personally, I hope that through this dreadful event some small good will come and we can reflect and build a more efficient and effective education system.

In 1869, Charles William Elliot, President of Harvard University, wrote a roadmap for education in his seminal essay, 'The New Education'. In this essay he made the case for continuously updating how and what students learn so that education could evolve in step with society. Society has changed beyond

recognition in the last 150 years and technology has driven much of this change, but education has remained static and the way we teach and what we teach has hardly developed at all.

Firstly, if you are reading this article you are unlikely to be a typical teacher! Reading the NAACE journal implies you are likely to be tech savvy and understand the potential power and pitfalls of technology, whilst many teachers will not have mastered the very basics of the tools they are now having to use. The DFE seems notably absent from this in either leadership or planning and this has left teachers and schools to work through and make judgments on practical and ethical issues, as they try to transition from a traditional classroom environment.

With a few exceptions, schools have had to unleash a helter-skelter of innovation with ad-hoc arrangements to ensure that pupils have a continuity of educational provision. For many this has meant the use of online learning and video whilst some, for a variety of reasons, have preferred to send work books home.

Where schools have already used online learning, it has often been led by innovative and creative teachers with experience of technology or truly innovative schools themselves. Naace members will have been key in shaping much of this, especially those who have worked on the Self Review Framework.

IRIS Connect was a start-up that had its roots in a Gatsby-funded research project into effective professional learning, using video and research has continued to help drive our developments. We have benefited from partnering with the MirandaNet Fellowship on several projects, from links with universities across the world to involvement in many Erasmus+ projects. The company now works in 30 countries and, as a consequence, has the opportunity to create international networks for collaboration and support.

IRIS Connect is and remains, first and foremost, a professional learning tool for adult learning and particularly CPD and ITE. It is a platform that uses video and a range of tools to enable self reflection, coaching, mentoring, collaborative professional learning, streaming of best practice, development of collaborative groups and research. It has had a 'flipped learning' capability for over 7 years but we have decided to take a longer term view and focus on medium and longer term challenges and opportunities for professional learning going forwards, whatever platform schools are wishing to use for online learning.

Our approach has been to recognise that we are going to need to reverse engineer both project management and the change management process. To do this we are looking at this in three phases:

- short term to consolidate and develop skills;

- medium term to refine and articulate more effective responses;

- longer term to capture the opportunities for the more effective use of EdTech that evolve from both the lessons we have learned and the wider acceptance of EdTech itself.

Short Term
We are developing a 'Distance Learning Toolkit' that can be used to help teachers to further develop and refine the skills necessary for online learning. This is in two parts:

- the provision of resources for teachers. These can range from short 'How To' videos for using technology, through resources supporting teachers in dealing with issues such curriculum

to potential consequent mental health and behavioural issues. These resources can be held within Groups to enable collaborative working and support. If you wish to contribute to these Groups or set one up, please let us know;

- the evolution of the platform itself. Recent developments include screen-capture, video conferencing and the opportunity to integrate other platforms such as Google or Microsoft. This means that teachers can even more effectively self-reflect, be coached, participate in collaborative joint practice development, research, collaborate with colleagues within and across schools and even across countries and continents.

Medium Term:

In the medium term the focus is on ensuring that wider professional learning opportunities, beyond the current challenges, are met with an emphasis on:

- using the cloud to enable collaborative learning, joint practice development and research over distance;

- the ability to create and link together smaller interest groups eg: where specific interegroups may be small in one geographical location but can form viable groups over a wider geographical group;

- further developing programmes such as the well-regarded 'Film Club' to enable teachers to continue with wider CPD even if they are working from home;

- remote coaching and mentoring using expertise from other professionals;

- developing international collaborations around practice and research;

- remote CPD and JPD which is teacher-led - we know from research blended approaches can be very effective, cost efficient and enable broader access.

All these activities are available on the current IRIS Connect platform but many of the technical advances have 'supercharged' refinements made more critical by the current crisis and enabled by our incredible development team.

Long term:

In the longer term the focus should not be simply about consolidating skills and knowledge but have the ambition to create a new ecosystem for education. If online learning is only seen as a stopgap and temporary solution to enable schools to do what they have always done, we will have missed an opportunity to move education forwards. I go back in my mind to Charles Elliot's article written in 1896.

In the longer term we need to 'Reflect and Build' and this will be another challenge for teachers, schools, academia to provide a model going forward that can be used to challenge the status quo and influence policy makers.

This needs to be aligned to a more fully articulated pedagogy and, importantly, a pedagogy that can be 'sold' to influencers and policy makers

EdTech is not an alternative to traditional schooling, but it should help education to be more creative and innovative to meet the needs of a developing society, based on the opportunities made available through technology. But there are many questions that we need to ask ourselves:

- how do we ensure equity of access? It is a huge shame that the 'Home Access Initiative' was

killed off. This is a policy issue of huge importance and maybe now is the time to reassert pressure on the DFE and politicians to revisit this. It is clearly articulated in the NAACE Self Evaluation Framework and is now more important than ever;

- how can pupils' emotional needs be met during periods of self-isolation? Possibly not a strength of EdTech but what is the best practice? Who is doing this well?

- what are the advantages of synchronous and asynchronous learning and how should these be blended for the greatest impact?

- many teachers will be using some aspects of EdTech for the first time. What can we learn about the barriers that have inhibited them historically and how can we build this into future training?

- can we now start to build collaborative frameworks for Joint Practice Development across schools using EdTech? Will this crisis help break down barriers to collaboration and cooperation? What can we learn and how do we promote this? There are some good examples out there, mostly within Trusts, but we need to analyse barriers and promote solutions;

- and, the biggest challenge, how do we make policy makers at the DFE and in Government actually pay heed?

What do we know already?

As a company, IRIS Connect has been involved in many research and knowledge exchange projects around ITE across Europe. These projects have included remote observation of students (a blended approach has been shown to be cost efficient, more popular with students and effective), micro-teaching, coaching, peer mentoring and review, collaborative learning and development of resources. Involved in this range of formal programmes have been 30 European Universities (and a few beyond).

Organisations such as the international MirandaNet Fellows have also been active members in international research and practice programmes as well. The Technology, Pedagogy and Education Association (formerly ITTE) hold important findings: MESHguides makes it their business to produce short research guidance written in a form that teachers can grasp quickly.

On the other hand, sadly, some UK universities have steadfastly continued doing what they have always done. Can we use this crisis to drive more innovation within the UK ITE system? How can we expect teachers to embrace EdTech when so many advantages of it beyond the basics are ignored whilst they are trained. Some teachers have found using EdTech very challenging and we need to understand this and find ways of supporting those that are users.

This crisis has made our personal world smaller, but can we use it to create wider horizons? The new dynamic in education should be around recognising that education is an interdependent ecosystem that depends on collaboration and cooperation between teachers, schools, academics, researchers, countries and industry. EdTech can help make this happen and we don't need to just rely upon the huge multinationals to do this.

So, no, this is not a usual article; it is a call to arms! If we can look beyond the maelstrom we can start to build a future based on what we have learned and through collaboration. Get in touch if we can work together: graham@irisconnect.co.uk
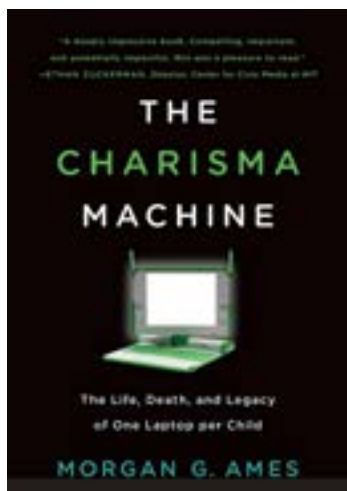
Book reviews

Note If you have a book in mind ask the publishers for a Naace Advanced Education review copy which should be free. Book reviews by David Longman

The Charisma Machine: The Life, Death, and Legacy of One Laptop per Child

Morgan G. Ames

MIT Press, October 2019

Teachers who work with and think about the role of computing in education as a tool or as an object of interest will find this is an important and pleasurable book. For some (including the author of this review) the idea that programming a computer could be a novel way to learn about important ideas in mathematics, language, physics or computing itself has been a captivating way to think about the educational value of computers. This was particularly so when personal computers were becoming affordable for individuals and, with government support, for schools.

Such was the influence of Logo and the enormously creative work of Seymour Papert, Cynthia Solomon and many others at MIT during the 1960s and 1970s. Embedded in the artificial intelligence culture of the day, programming was viewed as a representational tool through which the mysteries of human thought could be unravelled. Hence Papert's slogan, one of many, that learning through programming is a process of 'thinking about thinking'.

We live in a different world today, but at that time when the power of computing was moving beyond its origins in electronics, mathematics and engineering into wider cultural arenas, there seemed no limit to what might be possible computationally. In education, Seymour Papert became something of a prophet for this new tool that could bring concrete rigour to circulating philosophical and political debates about the purpose of schooling and the social control of education.

Read the rest of this review here:

Should Robots Replace Teachers?

Polity Press 2019

By Neil Selwyn

The automation of professional expertise is at a tipping point and education may be the next to succumb. Machine learning (often loosely referred to as AI) lies at the heart of this transformation. It makes possible the automation of judgements that usually rely on teachers' accumulated wisdom in both knowledge and relationships. Through teachers, students acquire an understanding of subjects and disciplines and they do so with the essential social and personal support that teachers can provide. But this critical aspect of a teacher's role may be in jeopardy.

See the complete review by David Longman in Times Higher Education November 2019

I now live and work freelance following various blogs and social media timelines for current issues in technology, politics and education. Reading and writing keep my mind busy. I enjoy garden landscaping which keeps me fit. When I can I do back-yard astronomy for perspective.

David Longman

Now retired, I began my career as a primary school teacher around the time the Micros in School Scheme was set in motion by the Department for Trade and Industry. I later moved into teacher training as a subject leader for IT, then ICT, and finally just before my retirement Computing.

During my career I worked with a wide range of students across nearly all phases and levels of education. Much of my teaching work centred around undergraduate and postgraduate teacher training (primary and secondary), MA and doctoral courses as well as adults with learning difficulties. Course development and planning formed a natural part of this background as it does for all teachers and lecturers. This included development of MA programmes and modules, online CPD support and accreditation, schemes of work and assessment frameworks.

I now live and work freelance following various blogs and social media timelines for current issues in technology, politics and education. Reading and writing keep my mind busy. I enjoy garden landscaping which keeps me fit. When I can I do back-yard astronomy for perspective.