

Reflecting on change: whole school collaborative research - opportunities with industry

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Professional ownership and management of change

One of the recommended long-term strategies to ensure the retention of teachers is to provide engaging and effective continuing professional development programmes (Preston 2004: Younie 2006: Davis, Preston, Sahin 2009a&b: Pachler et al. 2011: Leask and Younie 2013). However, releasing teachers from the classroom to undertake CPD is problematic for senior leadership teams, much as the majority of leaders would like to encourage reflection on practice not only for the classroom teachers, but for themselves as well.

Schön (1983) revolutionised traditional ideas about professional learning when he published, *The reflective practitioner - how professionals think in action*:

“I begin with the assumption that competent practitioners usually know more than they can say. They exhibit a kind of knowing in practice, most of which is tacit...Indeed practitioners themselves often reveal a capacity for reflection on their intuitive knowing in the midst of action

and sometimes use this capacity to cope with the unique, uncertain, and conflicted situations of practice (p. 8-9)”

This quotation emphasises the complexity of learning how to practice and the value of tacit knowledge, understanding, conflict and lack of certainty that go beyond what can be expressed in conventional academic prose.

Schön's (1983) method was called 'action research'. His view of teachers as active professionals runs against the trend of politicians in the UK who too often tell teachers what to do rather than respecting their knowledge and expertise. But teachers need to accumulate the research evidence that supports best policy and practice if they are to influence governments about how they should spend their money.

The MirandaNet Fellowship was founded in 1992 as a channel for professionals to influence policy and practice in the contested new field of education technology (edtech). The strategy was to develop a professional community like the medieval trade guilds that could share knowledge and expertise in a new and challenging curriculum area. We started with fifteen teachers who were given laptops by Toshiba - six months later we were all surfing the internet and talking together using a new-fangled service called email. Now we have more than 1,200 members world-wide. The internet has had an important role in developing this community online as well as face to face because it has made it possible for teachers in different schools to work together over a period of time and to publish their findings widely.

These factors helped us to tackle the issue of professional development in edtech with the design of a practice-based programme called iCatalyst, refining and extending Schön's action research methods. Whereas Schön tended to concentrate on individual teachers as researchers in their classrooms, 'practice-based research' emphasises collaboration in data collection and analysis in classroom projects as well as meta-analysis of all the data to explore the potential of change defined by the profession.

iCatalyst is a bespoke, personalised professional development programme that focuses on strategies that support the leadership and the management of change. In the programme, leaders of the schools or school clusters are involved in the design and delivery of effective professional development. In the first place they work with iCatalyst consultants who are MirandaNet Fellows to identify what they want to gain from their investment in digital technologies in terms of evidence of learning. The leaders will then be involved in the collaborative development of a research programme to collect evidence of learning in the classroom working with their colleagues. The outcomes include: accreditation for the leaders of the programme and the company adviser; professional development for all the staff involved; local evidence of improved learning and other benefits to use in reports for Pupil Premium and Ofsted; case studies and articles for school publications providing evidence on which to base changes in practice; knowledge embedded in the institution about effective professional development as well as programme designer; global publication of the teachers' and the pupils'

achievements. Inclusions in research reports published globally about enriching classroom practice.

Practice-based research funded by industry

Over the years MirandaNet Fellows have run regional and national government edtech programmes in China, Czech Republic, Germany, India, Mexico and South Africa drawing on the teachers' views as co-researchers about how they can implement effective change. Some of these programmes have involved exchanges with British teachers. In addition there have been major EU programmes between Bulgaria, Catalonia, Czech Republic, Finland, Greece, Portugal, Republic of Ireland, Slovenia, Slovakia, Spain, Sweden, and The Netherlands, (Preston et al. from 1992a).

The school senior leaders and practitioners set the research questions in collaboration with MirandaNet Fellows and help to analyse the data to see how the best impact on learning can be achieved. Importantly, the discoveries have resulted in ownership of change for the teachers involved, often with pupils and parents as well who have reflected on what works and what does not.

In working with education technologies MirandaNet Fellows have to form partnerships with edtech companies. Their support along with the British Education Suppliers Association (BESA) has been vital in building up evidence about using technology in teaching, learning and administration. Indeed, we are increasingly reliant on far-sighted companies to ensure that schools have an opportunity to engage in edtech professional development at certificate, diploma and Master level.

Our current industry associates are 2Simple, BrainPOP, Cengage, Code.org, Just2Easy, Learning by Questions, Lyfta, OutSet, SAM Learning, SMART, Spongy Elephant, Tablet Academy and Vision Education. In the practice based research projects the companies provide the technology and relevant services as well as product training. Associates also become co-researchers learning about how their product performs for in teaching, learning and/or administration.

Teachers in these practice-based projects have come up with some inspiring research findings from the classroom that also are used to improve the tool or service being researched. Recent findings by teachers include; the merits of virtual reality and immersive reality in learning particularly for the less able; the ways in which homework programmes and school news feeds can engage parents in their children's progress; how e-books can encourage reluctant readers; the success of digital resources like games, simulations, videos and quizzes in stimulating independent learning; the value of eye gaze tracking technology to support teachers assessment of PMLD pupils: and effective methods of deploying mobile devices (Preston et al. from 1992 b).

Some of the topics that schools have choose to explore include: Video based professional development; engaging reluctant readers; edtech skills development; holistic approaches to technology implementation; and, renewal of the ICT infrastructure

Here we cover two fields that are relevant to many schools: video based professional development and moving from Computing to Digital Media;

Transforming teaching practice

Teachers videoing their classroom practice to discuss with tutors, coaches and colleagues has proved to be a valuable means of improving technique and increasing confidence when this tool is used sensitively. The edtech company 'IRIS Connect', who are now supplying the CCoT online platform, Connect, have been a long term MirandaNet Associate. IRIS is a good example of a research-based company that invests staff time as well as money in working alongside practitioners to create a video enabled platform based on professional need. Beginning as a start-up at Sussex University, IRIS has collaborated with a range of partners that include: University of Birmingham, Education Endowment Foundation in the UK; VIA University College in Denmark; Saxion University of Applied Sciences and University of Twente in the Netherlands; Harvard University and Mathematica in the USA; the British Council in South Africa and 7 other countries; the Baltics; Thailand; and of course the European Commission where they collaborate with over a dozen European universities (IRIS 2018).

As a result of engagement with educators the IRIS Connect platform fosters supportive, collaborative learning culture among teachers with a common goal: improving student outcomes. The ethical approach is uniquely embedded in the design: videos of classroom practice go directly to the teachers' web space and only the teacher decides if this footage is to be seen by colleagues. The research collaborations have had some impact because MirandaNet quantitative research with 100 teachers found that:

- 94% of teachers using the system said their teaching had improved;
- 88% said their confidence had risen;
- 88% felt there had been a positive impact on collaboration;
- 96% felt they were willing to take more risks;
- 99% felt there were more conversations between teachers about teaching in their school.

These levels of appreciation were unusually high and suggest that web based video can be transformation in practice (Preston 2015).

In our qualitative practice-based studies on using this web-enabled video for professional coaching teachers have recorded how this has worked in the classroom in detail and what their thoughts and feeling have been. As researchers we were impressed by the teachers who

chose to share their unsuccessful experiences in the classroom as well as their achievements. So much was learnt from these shared observations when there was trust (Preston and Younie 2016).

Exchanging Digital Media for Computing

Gaia Technologies and Managed Service has been an effective research partner for MirandaNet Fellows because Bernard Dady, their Head of Education Transformation, was a local adviser of some standing with a Masters qualification in action research. He takes a holistic of the role of technology in schools, helping the leaders to manage and maintain IT assets. Providing bespoke solutions, developed to meet the exact IT requirements of each school, the company works to gain a deep understanding of the unique educational needs and goals of each school. This approach does not revolve around just selling the customer a product to meet their immediate needs, but aims to support the school's development over a period of time. Gaia works with clients to address wider IT vision and to ensure that all support and maintenance needs are met.

Gaia have invested in several iCatalyst projects in schools led by charismatic teachers who decide on the technology and the topic. Here we describe four that vary in size and breadth. The methodologies are adjusted accordingly.

At Ormiston Maritime Academy in Grimsby a practice-based study was designed to reflect on the challenges the school faced in Computing and to work with the teachers to find solutions. In fact, 8,000 Computing teachers were missing across the country at this time (BCS 2018). The school decided to deal with this problem by changing from Computing curriculum to Digital Media because, as an independent academy, the leaders did not have to follow government guidelines on curriculum subjects.

Grimsby was a context where this strategy was important. This coastal town is looking to replace the fishing industry with new businesses. Computing skills are much prized as a route to employment. The Academy has an intake of about 1,000 students, aged 11 to 16. An Ofsted report in 2010 indicated that the school had a larger proportion of students with disabilities or special learning requirements than is found on average nationally. Although the school was in a new building and had technology status they were struggling like many schools to staff the new Computing curriculum that had replaced the Information and Communications Technology (ICT) curriculum in 2012. Not only were qualified teachers hard to find but the computer science emphasis was also unpopular with the students, especially the girls.

As well as having expertise in the supply of ICT services, their technology partner, Gaia also maintains capacity to develop and innovate new technologies within the education sector. Gaia have a large team of programmers, video production specialists, graphic designers and 3D artists who work alongside schools to develop innovative digital content and promote use of

media technologies. About thirty children visited the Gaia's Studio Service team before the pilot started in order to understand how digital creatives work. This visit was described as inspiration by these young people who were excited by seeing how media is created. Even better when the creatives worked alongside them in the project which they also videoed (Gaia video 2016).

In this cross-curricula innovation, the pupils produced their own versions of the Blood Brothers musical. Led by Tracey Ramage, the initiative involved teachers from four departments: drama, design and technology, art and music. The complexity of what was requested was very challenging and demanded significant planning input and co-ordination from the company team. In this context the digital media project was highly ambitious and carried a significant risk of failure. It did, however, succeed because of the immense commitment of the individuals involved, including the students and the Gaia studio staff.

The reasons for the comparative success of the Digital Media project that the research explored were several. The project was collaboratively co-planned by the company's lead professionals working with a group of teachers. The project design was based upon an analysis of how content, pedagogy and technology might interact to provide students with an innovative learning experience. In addition, all participants, including the company's on-site engineers, were well briefed and the sharing of information was good, primarily because of the internal school leadership of the project. The adaptability of the team and response to needs was also crucial.

Other MirandaNet studies with Gaia have covered: engaging reluctant readers; edtech skills development; and, renewal of the ICT infrastructure (Preston et al. from 2000 a/b).

Grassroots practice-based research questions

Education professionals cannot avoid using technology for teaching and learning and for administration which inevitably impacts on the learning environment. Other subject areas do not face quite the same challenges although few teachers can avoid technology altogether. The ethical issues always need to be addressed and poorly designed and gimmicky products given a wide berth. But this can only be done if teachers are supported in distinguishing between what is intrinsically valuable to them and what is just a passing novelty.

In the iCatalyst programme, schools elect to research a product or service they want to use or may already be using. Company funding is valuable in providing the kit and the skills training and often the expenses for cover and travel. But in terms of ethics, MirandaNet Fellows only accept research opportunities from companies who are willing to learn. Indeed, the company advisors often engage with the research project and also gain an award. The MirandaNet associates also agree to publish research results that are an honest account of findings, not marketing copy doctored to create a rosy marketing glow.

The profession needs support as we still do not know enough about how technology can help us. The politicians have put Computer Science centre stage, but less is taught now about how

to use applications safely, securely and sensibly. More important, members report that they need curriculum space to teach about Digital Literacy and Citizenship as well as E-safety. In a democracy professional needs the tools to teach our pupils how to make good judgements online, how to avoid addiction to their screens and how to spot 'fake news'. Asking deeper questions and engaging in practice-based research that is published for others is one way of adding to our professional pool of knowledge about how to avoid the pitfalls and exploit the value of technology. At the moment it is the edtech companies with vision who are offering a means of building professional knowledge through teacher-led research, thus ensuring that some teachers do have the opportunity to take ownership of edtech policy and practice.

How can this opportunity be extended to more teachers?

Footnote

In 2019 the MirandaNet Fellowship and The Association for Information Technology in Teacher Education (ITTE) will be merging under the title, Technology, Pedagogy and Education Association (TPEA). The aim of this new professional organisation will be to enhance the use of digital technology across the curriculum and the teaching of computing.

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References

- British Computer Society (2018) BCS teaching scholarships:
<https://www.bcs.org/category/19065>.
- Davis, N., C. Preston, and I. Sahin (2009a) ICT teacher training: evidence for multilevel evaluation from a national initiative. *British Journal of Education Technology (BJET)*. Volume 40. Issue 1 (January 2009) (Published Online: Feb 5 2008 12:00AM): 135–148.DOI: 10.1111/j.1467-8535.2007.00808.x
- Davis, N. E., C. Preston and I. Sahin (2009b). Training teachers to use new technologies impacts multiple ecologies: Evidence from a national initiative'. *British Educational Research Journal (BJET)*. Volume 40. Issue 5 (September 2009).
- IRIS Connect research publications (from 1998)
<https://www.irisconnect.com/uk/impact/research/>
- Leask, M. and Younie, S. (2013) 'National Models for Continuing Professional Development: The Challenges of Twenty-First-Century Knowledge Management' *Journal of Professional Development in Education*, 39 (2): 273–287. doi:10.1080/19415257.2012.749801.

Pachler, N, Preston, C., Cuthell, J.P., Allen, A. and Torres, P. (2011) The ICT CPD Landscape in England Becta download here.

Preston C. et al. (from 1992a) MirandaNet iCatalyst reports

<https://mirandanet.ac.uk/icalyst/examples-of-icalyst/>

Preston C. et al. (from 1992b) MirandaNet Associates Research publications

<https://mirandanet.ac.uk/about-associates/associates-research/>

Preston, C. (2004) Learning to use ICT in classrooms: teachers' and trainers' perspectives

TTA/MirandaNet London <http://www.mirandanet.org.uk/tta/>

Preston C (2015) Innovation in Teaching and Learning MirandaNet/De Montfort

<https://www.irisconnect.com/uk/impact/research/> and

<https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2015/10/Innovation-in-Teaching-and-Learning-IRIS-Connect.pdf>

<https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2017/09/Inspiring-tomorrow%E2%80%99s-leaders-article-copy.pdf>

Preston. C (2016) Inspiring Tomorrow's Leaders: moving from a Computing to a Digital Media

curriculum MirandaNet Fellowship. <https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2017/09/Inspiring-tomorrow%E2%80%99s-leaders-article-copy.pdf>

<https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2016/12/Innovations-in-PD-V9-1final-9th-Dec-2016.pdf>

Preston C. and S. Younie (2016) Innovations in professional development: real-time, in-ear

coaching MirandaNet/De Montfort University <https://www.irisconnect.com/uk/impact/research/>

and <https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2016/12/Innovations-in-PD-V9-1final-9th-Dec-2016.pdf>

<https://39lu337z5111zjr1i1ntpio4-wpengine.netdna-ssl.com/wp-content/uploads/2016/12/Innovations-in-PD-V9-1final-9th-Dec-2016.pdf>

Schön, D (1983) The reflective practitioner- how professionals think in action: Basic Books, USA

Younie, S. (2006) 'Implementing Government Policy on ICT in Education: lessons learnt',

Education and Information Technologies, Vol 11, Nos 3-4, pp 385-400.