Draft: Work in progress

Literature review and case studies in Strategies, Models and Tools for Continuing Professional Development for Teachers in e-Learning

1. Constraints and Definitions

There are several constraints on reviewing the way that in-service teachers are being helped to gain skills in changing technologies and new pedagogies. Firstly, CPD in this area has grown much faster than the research. Blog posts, on-line forums, conferences and other forms of communication suggest that far more is happening than is recorded in published research.

Secondly, Daly, Pachler and Pelletier (2009) argue that "the literature provides evidence that many effective approaches to ICT CPD are in place, but they remain localised" #CPD is fragmented - unlike initial training, it is not a homogenous model and interesting small scale developments may not be widely disseminated. What ICT CPD lacks in coherence, it makes up for in innovation but this is difficult to capture. As Daly, Pachler and Pelletier (2009) note, it is "a very varied provision which has grown ahead of a comparable rate of research into its effects."

Thirdly there are issues around definitions. We have already raised the problem of defining e-learning but defining 'CPD' is also problematic - in terms of exactly what can be labelled as 'CPD' and also in terms of scale. As Becta (2006) points out:

"However, it is worth noting that the lack of a commonly agreed and well understood set of definitions of e-learning competences, taken together with the uncertainty about what constitutes good practice and effective pedagogy for e-learning, may have led many respondents to overstate the e-learning skills levels of staff."

Fourthly, the data sources of some of the published research should be taken into account. For example, the statement "Some 80 per cent of colleges offered staff development programmes to support staff who wished to develop or adapt e-learning materials." (Becta, 2006) is based on the replies to a postal questionnaire sent to college principals.

Finally, in looking at research into effective practices in ICT CPD in order to draw out what appear to be critical success factors, it is hard to isolate "... CPD issues which are specific to ICT CPD [as opposed to those] which are linked to wider approaches to the effective professional development of teachers." (Daly, Pachler and Pelletier, 2009).

2. What is delivered?

Becta (2006) reported that over 90 per cent of colleges offer some development opportunities in using classroom technologies and learning platforms and in developing learning materials.

The literature identifies two distinct trajectories; the digital literacy approach with the focus on developing teachers' technical skills and a pedagogic approach with the emphasis on new teaching and learning opportunities afforded by the technology.

Some of the literature has adopted a critical stance or been supportive of one or the other.

For example Daly, Pachler and Pelletier (2009) claimed that there was

"An over-emphasis on skills training in itself at the expense of deep understanding and application of skills to developing learning and teaching. This is linked to a perceived need to address a skills 'deficit' in teachers, rather than to develop a focus on pedagogy."

Writing from a Higher Education perspective, Davis and Fill (2007) found that:

"A good approach has been to allow the academics to specify their needs, then to show them technological solutions that might meet those requirements, rather than start with the technology."

[*"Thus, when the idea of a 'nugget' emerged from the early meetings that sought to establish common ground, the learning technologists did not initially rush to replace it with the term 'learning object', nor to expose the academics to emerging interoperability standards and metadata theories."*]

Conversely, Westerman and Graham-Matheson (2008), cited in Vogel (2010), identified digital literacy as key. Their claim was based on action research in Canterbury Christchurch's Learning and Teaching Enhancement Unit to build digital literacy among academics.

"Twenty five volunteer participants selected six digital tools from a suite of institutional and Web 2.0 tools assembled by the LTEU ... and devised their own personal development plans for the coming year. The LTEU provided group workshops or demonstrations, with homework and a follow-up session. All but the most experienced self-reported significant gains in digital literacy and many reported easily applying what they learnt to their practice."

Some authors advocated an integration of the two. The Management of E-Learning (CAMEL) project (Higher Education Funding Council for England and JISC InfoNet, 2006) rejected European Computer Driving Licence-type training in favour of *"small chunks that relate to something they are actually doing"*, and suggested that requests for technical support should be taken as *"new opportunities to disseminate new ideas, give pointers and engage staff further every time you interact with them".* The technical needs here are viewed as an opportunity to start a conversation about pedagogy.

In terms of practice, the technical skills approach seems to predominate although most of the rhetoric advocates concentrating on the pedagogy.

Becta (2006) reported

"Generic ICT skills, along with training in particular packages or applications, were the most widely offered areas for skills development, offered by 99 per cent of colleges".

However, it is unclear whether this is 99% of all colleges or 99% of the 80% of the colleges which said they provided ICT CPD.

In marked contrast, Daly, Pachlet and Pelletier (2009) concluded

"There are insufficient means for ensuring that all teachers can access high-quality professional development in this area."

Becta (2006) also noted that

"The skills needed for teaching online were offered far less widely, with 28 per cent of colleges not offering development in this area."

This suggests that 72% of colleges do offer training in on-line teaching, which actually seems a very high percentage.

3. Who delivers it?

Daly, Pachler and Pelletier (2009) found that the dominant model across both primary and secondary schools was school-based and 'in-house' ICT CPD.

"Although some use was made of external providers, the vast majority of ICT CPD experienced by teachers was reported as being provided by colleagues within their own school."

According to the teachers and headteachers who were interviewed as part of the study, there was little evidence of co-operation with other schools or use of the universities or freelance trainers and there was a reported shift away from course-based CPD. The exception was that vendors or other commercial companies were occasionally used to provide short-term skills training following the introduction of new hardware or software (e.g. the purchase of interactive whiteboards.

The Becta (2006) report confirmed that this pattern was reflected in colleges. They reported that

"Around 66 per cent offered support from [in house] e-learning 'champions' and 68 per cent offered support from technical staff... Of the 26 per cent of colleges that offered other support, a number mentioned support from other members of staff, often on a one-to-one or mentoring basis."

There has been no change in these figures over the last few years.

Daly, Pachler and Pelletier (2009) supported the move to using in-house staff to deliver ICT CPD and were of the opinion that it was a more effective model than using outside suppliers

but added that external providers were useful in providing new ideas and for finding out what happens elsewhere. They concluded that the ideal was a blend of the two.

4. How is it delivered?

Trying to map the different models of delivery and the range of activities which constitute CPD is not straightforward. As Daly, Pachler and Pelletier (2009) commented

"The devolution of control over ICT CPD provision to school leaders in an expanding free market economy for CPD has meant that an extremely varied pattern of provision exists.

There is much inconsistency in reporting on the effectiveness of certain types of provision, especially regarding Local Authorities and Higher Education Institutions. CPD arrangements with these stakeholders are so varied that it is difficult to generalise about them in terms of their approach and success."

The same is true of the FE sector.

In order to make sense of the range of provision which exists, Vogel (2010) suggested a framework based on Land's (2001) work. He suggested that different delivery models of ICT CPD could be located somewhere along the following axes

- Technology-centred - pedagogy-centred

- Learner-centred - institution-centred

- Centralised - local

- Extrinsic - intrinsic motivation

- Formal - informal

- Situated - generalised

- Support - development ethos

- Voluntary - compulsory

Daly, Pachler and Pelletier (2009) made similar distinctions and identified a

"...main feature which distinguishes models of provision is how far the CPD is based on collaborative, bottom-up, teacher-generated activities involving several contributors, in contrast with centralised, one-size-fits-all, whole-staff CPD usually provided by a single 'expert'."

Daly, Pachler and Pelletier (2009) were actually concerned with the school sector and Vogle (2010) with Higher Education but their distinctions are generic and work across sectors).

There was a common theme in the research that the traditional model of sending staff on inset courses was not the right one. Boud (1999) was concerned that centralised workshops or courses resulted in limited benefits:

"There is often little opportunity to practice new skills or ways of working, the colleagues who can support or undermine initiatives are rarely involved in such programs and new practices are often insufficiently contextualised to work in what might appear to be an alien environment."

This was backed up by Daly, Pachler and Pelletier (2009) who noted

"the prevalent dissatisfaction with one-off courses and external programmes which do not take account of the specific contexts of the school"

and Vogel (2010) who found *"Poor attendance at centralised workshops."*

However, the dichotomy is probably painted too starkly. CPD may be delivered in-house by outside 'experts' or external CPD programmes may be delivered through online courses, be heavily contextualised and use a problem-centred approach.

Becta (2006) reported that in colleges

"face-to-face delivery was by far the most common method of delivering staff development to teaching staff. Blended learning solutions were the next most commonly deployed, with self-study options (either electronic or paper-based) offered by a smaller, though still significant, number of colleges."

The picture in schools was more varied. Daly, Pachler and Pelletier (2009) identified the following ways in which in-house CPD was being delivered in the secondary sector:

- Compulsory formal 'Inset' sessions for all staff about using new technologies
- Compulsory small group sessions for staff who share subject or phase backgrounds, frequently based on developing pedagogy
- Optional after-school CPD sessions on specific software
- Brief 'tasters' or briefings at staff meetings to provide updates on new software.

5. Case studies

Other research focused on small-scale case studies. For example,

Hanrahan and colleagues (2001) designed their Professional Engagement Group (PEG) model *"as a community-based alternative in a school within their institution's Faculty of Education. Small groups convening, sometimes only briefly, round a given problem, were facilitated by academics who had taken on the remunerated role of school online teaching advisors (SOTAs)"*

Vogel (2010) reports that Heaney and Odell presented a case study of work they undertook as Advisors for Learning Technology at the University of East London, focussing on bridging the gap from knowledge and skills to practice in the classroom. This was based on:

"A structured, rapid and iterative problem-based group activity to introduce academics in the departments to Web 2.0 technologies as follows:

Preliminary stage: a needs-analysis questionnaire to help narrow down the technologies to be introduced

Stage 1: in a ten minute presentation, a technology is briefly "passed in front of the eyes" of academics

Stage 2: in groups they then brainstorm how these might used it in their own contexts, write succinct ideas on post-it notes and stick them onto the wall. The process is repeated with a number of technologies.

Stage 3: academics look at each others' posted ideas, and use stickers to prioritise them.

Stage 4: there and then if possible, the Learning Technology Adviser summarises the priorities, proposes an action plan to bring them about, and encourages the group to nominate a contact for each project."

Vogel (2010) cited MacFarlan and Everett's (2009) innovative work on e-mentoring in which a buddy system was set up between a lecturer who was inexperienced with technologies and a learner who was confident with them. The university had invested in new technologies but the take up was poor, which they attributed to lack of skills and also no organisational culture of e-learning. Recognising that it was the students who had the ICT skills, they built capacity through some interesting role reversal.

"The institution offered training sessions with the technologies to both partners...and the two would take an as-and-when, on-the-job approach to working technologies into designs for learning. Lecturers reported feeling more relaxed about using technologies in the classroom and were not reluctant to ask for help. There was a suggestion that students were primarily required to provide technical support, and that any educational focus was on their own initiative."

Online CPD

Several universities run professional development courses on line. For example, Glyndŵr University offers the Postgraduate Certificate in E-learning,

"which is delivered entirely on-line, provides a flexible yet coherent programme of accredited professional development designed to increase the knowledge and skills needed to apply technology effectively to support teaching and learning across a range of educational and training contexts."

The University of Greenwich runs a professional development programme leading to a Certificate in e-Learning, Teaching and Training (CeLTT) to help staff understand both technology and pedagogy. The course was originally offered fully online but it was found that people can feel disempowered without a face-to-face element so it now also offers a blended approach for learners able to attend.

Camel Stoke College has 'Holy Hours' set aside for staff development whereby all tutors have two hours per week for ICT CPD. This was in response to a skills audit, which revealed

that many middle and senior managers are embarrassed by their lack of IT skills. Staff are asked to identify their own priorities and skills deficits. Since introducing the scheme they have been overwhelmed by requests for on-to-one training.

There are increasing opportunities to use on line resources for personalised CPD. However the IfL (2010 (c))report that "although there is a large variety of media and technologies through which members can gain new skills or develop their practice, as part of CPD, in general more members either had not used or heard of 'new' technologies, than had." However, there is a substantial take up of the IfL REfLECT e-Portfolio tool, with over 80,000 Ifl members having created accounts. In the IfL 2009 membership survey (IfL, 2010 (a)), 51 per cent of respondents used REfLECT to record their CPD and/or undertake Professional Formation while from this sample 90 per cent had used REfLECT (Frequently 51.41 per cent, Infrequently 38.42 per cent) over the past year. IfL report that most members used REfLECT for more than 20 hours over the past year (41%), a quarter between 11–20 hours and 29 per cent only 0–10 hours.

The major barriers to using REfLECT were lack of time, low confidence in how to use REfLECT, difficulties with technology and that their employer required them to submit their CPD records by another system.

It is also notable that technology can be used to support CPD outside the area of teaching and learning. For instance technology can be used to scaffold CPD for management issues or for career progression, using social networking, recording and reflecting learning to help reinforce the message of the effectiveness of technology for learning.
In summary, research indicates that the source of CPD provision itself is less important than the learning approach which is adopted. CPD which is designed to be collaborative is reported as effective in a majority of studies whereas CPD designed for, and delivered didactically to teachers by a third party is not.

In their review of Continuing Professional Development in ICT for Teachers, Daly, Pacler and Pelletier (2009) concluded: *"The core issue to emerge from the review is that teachers need to be at the centre of their own learning if they are to change their deep-seated beliefs and habits regarding the use of technology. Otherwise, surface-level adoption occurs."* (p6)

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6. What are the problems and barriers?

Lack of adequate access to technology

This is a dominant theme in the literature. Daly, Pachler and Pelletier (2009) say there were two levels to this problem. Firstly, it was difficult for teachers to practice using the technology as it was centrally stored and could not be taken off the premises. Booking it out could only be done during school hours and 'free' periods were often not long enough to make this worthwhile. In particular, computers in staff rooms are often shared and lack of laptops with appropriate software means teachers cannot experiment at home. Secondly, once teachers have mastered the technology, they found it difficult to embed e-learning in their practice as computers are almost always located in specialist rooms. This was reported as having a 'seriously detrimental effect' on teachers

"The persistent pattern is of teachers lacking easy access to flexible ICT in their own teaching classroom. Lack of access for non-ICT teachers to physical space where computers are based in specialised suites is a major factor which restricts the everyday adoption of practice involving technologies" (Daly, Pachler and Pelletier, 2009)

Dumbing down

The same study noted that teachers said they were demotivated by the lack of intellectual challenge offered by a purely skills-based approach and objected to having to practice de-contextualised skills without reference to any underlying pedagogy. Several teachers commented that ICT CPD was aimed at raising all teachers to a common basic standard, rather than developing their expertise as individuals. Another criticism was that courses were often run by ICT technical staff, not teachers.

Commercial providers who deliver ICT CPD report that their brief is often "to bring everyone up to speed" However, it is important that CPD encourages innovation and excellence as well as addressing deficits.

Hard sell

Teachers were also alienated by what they saw as hard-sell approaches by zealous 'experts' and the often insensitive attitudes of people outside the profession who were implicitly or explicitly critical of their current practice. This reflects the above point - that teachers perceive a credibility gap when taught by non-teachers.

Daly, Pachler and Pelletier (2009) reported instances where

"Representatives of the Building Schools for the Future initiative had argued that face-to-face learning in classrooms is outmoded. Teachers have deep commitment to making personal relationships and cultivating effective communication with young people in real classrooms, and wish to use technologies to support these values."

Commercial considerations / vendor influence

In some institutions ICT CPD is heavily linked with buying particular products from commercial providers. This may be dictated by purchasing policy, by technical support departments or service level agreements rather than by assessment of learning needs.

In addition, vendors are often responsible for the CPD linked to the use of a particular platform or software application. This may stifle exploration of other available software and act as a barrier to innovation and the adoption of new applications as they become available.

*"The ICT CPD landscape is subject to many powerful influences, including commercial interests, the demand to showcase high-profile technologies and the competing CPD agendas driven by high stakes testing which can inhibit pedagogical development." (*Daly, Pachler and Pelletier, 2009).

Individual vs institutional needs

There appears to be a tension between addressing individual and whole-school development needs. Teachers report that the latter usually dominate the CPD agenda. However, treating teachers as individual learners is important if deep-seated beliefs about learning are to be reviewed and attitudes changed regarding the role of technologies in the classroom.

Daly, Pachler and Pelletier (2009) point out that

"The main feature of successful CPD is that it addresses teachers' individual needs as a priority. Their needs are highly varied, and are determined by their histories of using technologies at work and in their home life, as well as their subject specialisms and context-specific issues related to the students in their schools. "

Moreover, Vogel (2010) argues that these

"Policy tensions .... deflect from coherent and consistent development of pedagogy using technologies, and create conflicts over how time and resources are used to embed technologies within schools."

7. What are the successes / critical success factors?

A summary of the research reveals the following key factors as critical to effective ICT CPD

- *Peer learning / skill sharing*

  Teachers who have more experience are given structured opportunities to share with those who have less and there are no hierarchical divisions between 'experts' and 'non-experts'. Most importantly, this sharing process is valued and legitimated. This depends on the institution having a strong sense of community and a shared ethos of peer learning. This has to be built rather than imposed.

- *Small group learning*

  As noted above, there has been a trend away from mass 'Inset' sessions towards group work as a valid form of CPD activity. Groups may be based around skill levels, different software interests, subject specialities or different target groups (e.g Women returners, Special Educational Needs etc). There were many positive reports on the

effectiveness of this approach as a vehicle for discussing practice and planning new approaches.

- *Informal learning*

Informal learning may be more important than formal courses.

*"Informal conversations are vital, as is dedicated time to allow teachers to talk together and plan for new approaches in terms of their use of ICT in learning and teaching." (*Daly, Pachler and Pelletier, 2009)

Informal learning, by definition, cannot be planned but can be facilitated by creating time and space for networking, inclusive leadership styles, democratic staff relationships and the development of staff as a learning community.

- *Clear links between CPD and practice*

The additional benefits of using ICT must be very clear. CPD activities have to be immediately relevant to the individual teacher and applicable in the classroom.

As teachers become more familiar with the technology, there is an increasing demand for subject specialist CPD, an area which is not well developed and frequently not a priority. It is also likely to be one in which there is least in-house expertise available.

*"There is also .... dissatisfaction with school-based CPD where it is poorly planned and does not take account of subject differences and 'mixed ability' issues in teachers' technical competence." (*Daly, Pachler and Pelletier, 2009).

- *A sound pedagogic base and reflexivity*

There should be a shared of understanding of how learning occurs, how it can be planned and facilitated and what constitutes effective teaching and learning. This may be stating the obvious but there criticisms of some commercial providers who were perceived as having a different baseline.

The design of the ICT CPD should incorporate effective use of ICT for learning. That is, it should practice what it preaches. Teachers need to experience and participate in e-learning activities as part of their professional development

*"The incorporation of group work, collaborative problem-solving, independent thinking, articulation of thought and creative presentation of ideas are examples of the ways in which teachers' CPD might focus on pedagogy, with a view to how technologies can support these processes." (*Daly, Pachler and Pelletier, 2009).

This is not simply a UK perspective. In the Netherlands Drent and Meelissen (2008) studied what factors obstructed or stimulated teacher trainers to use ICT innovatively and observed that

"Teacher trainers who use ICT innovatively in their [own] *learning process are interested in their own professional development, keep extensive contacts with colleagues and experts in the area of ICT, see and experience the advantages of the innovative use of ICT in education and the pedagogical approach can be described as student-oriented "*

(OECD,2009)

- *Leadership*

A clear vision for ICT CPD focused on pedagogy and teacher development was seen as a prime factor by staff and providers.

If the overall objectives and a coherent strategy are in place this can help avoid or overcome operational problems of time and funding. Effective leaders can build capacity by maximising the range of expertise that staff already have and drawing them together as part of a co-ordinated approach to CPD. This could include, for example, identifying excellent practitioners who use creative approaches in the classroom (using traditional pedagogies), staff with ICT skills, staff with experience of facilitating peer learning groups, staff with staff training and communication skills.

- *Working with newly qualified and trainee teachers*

New teachers, particularly younger ones, may be able to make a valuable contribution to the ICT CPD of established staff and this should not be over-looked.

- *Ownership of equipment:*

Teachers and lecturers need to feel that they can 'play' with their own kit in order to develop familiarity and confidence , that they can use it for learning outside working hours and that they can customise it in a way which reflects their particular needs. This was a big issue for teachers but often at odds with institutional policy despite the fact that the preparedness of teachers to use their own time for learning actually saves money!

"Problem-free access to equipment and specialist technical support are pre-requisites for CPD to take effect. Without these, teachers become de-motivated and lack confidence in trying out new ideas." (Daly, Pachler and Pelletier, 2009)

- *Time usage*

Teachers resented time wasted on a lot of formal CPD, especially if it was not directly related to classroom practice, but valued time they could spend with colleagues to generate ideas and plan activities that could be implemented in the classroom.

"It has been shown that teachers need regular time during the standard working week in order to discuss T & L. They need both knowledge of the research base and continuing 'structured opportunities for new learning, practice, reflection and adjustment' (Coffield, 2008)

- *Involvement of non-teaching staff*

Senior management felt that this was important but perceived as less so by teachers.

- *Use of mentors or learning coaches*

Apprenticeship and support are very important for in-service teachers in acquiring knowledge and adopting innovatory approaches in their classrooms.#

- *Observation of practice*

According to Daly, Pachler and Pelletier (2009), watching colleagues use ICT in the classroom was seen by the majority of teachers as one of the most valuable forms of CPD. However, very few had had the opportunity to do so. Another strategy which was popular was the chance to observe and work with external experts who visit classrooms to teach CPD by working with students.

- *Ring-fenced funding*

In the school sector, headteachers felt strongly that funding for ICT CPD should be ring-fenced as

"ICT CPD is not perceived as a priority among competing agendas for school improvement, and is not associated by some headteachers with raising attainment levels in literacy and numeracy, which currently dominates CPD plans in many schools." (Daly, Pachler and Pelletier, 2009)

It is difficult to see how this could be done in the corporate FE sector. The motivation for introducing ICT in colleges or in the workplace is far more complex and includes not only an appreciation of the pedagogical benefits of using ICT in the classroom but also an awareness that vocational education and training needs to reflect the increased use of ICT in the workplace and a perception that e-learning is cheaper than traditional learning. (Punie and Cabrera, 2005). This has a direct impact on the priority given to ICT CPD.

- *Networks and communities of practice*

Kirsti Ala-Mutka et al (2008) recognise the usefulness of social software in ICT CPD. They argue that establishing and participating in teacher networks and following innovative practice development in the field is a crucial part of effective CPD

"Initial and in-service teacher training should disseminate insights and best practices with new innovative approaches, encouraging teachers to experiment with digital and media technologies and to reflect on the learning impacts of their own teaching practices."

An example of best practice in establishing a community of practice to support ICT CPD is probably TeachMeet. Tim and Moby of BrainPop explain what TeachMeet is in their

Scottish Learning Festival Teachmeet movie (2009)
(http://www.youtube.com/watch?v=SlSQYSnPUQY&feature=player_embedded):

> *"It's like Show and Tell for teachers." That is to say, it is a model of Continuing Professional Development (CPD) which involves those attending as participants in delivering the training as well as receiving it."*

Teach Meet began in Scotland in 2005 and has grown and spread very quickly. It was initially designed as a one-off meeting of online colleagues but...

> *"What we ended up with was a kind of regular event that we could have where people were sharing stories and trying to share some practice as well, but in a really laid-back, informal environment".* Ewan McIntosh quoted on the H-Blog (unattributed, 2010) (http://h-blog.me.uk/?p=161)

In some ways a product of its own success, TeachMeet might be in danger of becoming too mainstream, not different enough, or too dependent on sponsorship and needs to diversify beyond the very large, but still very 'niche' group that attend it.

- **The use of E-portfolios as a tool in ICT CPD**

> *"The ... eportfolio is a purposeful aggregation of digital items – ideas, evidence, reflections, feedback etc., which 'presents' a selected audience with evidence of a person's learning and/or ability."* (Sutherland and Powell, 2007).

The OECD (2010) recommends that all teachers develop an e-portfolio to support, record and reflect their CPD. This serves three purposes. Firstly, it encourages teachers to use ICT regularly and systematically to support learning. Secondly, they will understand the potential of using e-portfolios with their students and will have first-hand experiences of the issues, problems and benefits they offer. Thirdly, it will serve as a model to encourage student teachers to use ICT during their ITT.

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