Continuing Professional Development in ICT for teachers

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Caroline Daly
Norbert Pachler
Caroline Pelletier

WLE Centre, Institute of Education, University of London

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1   Executive summary

This report presents the findings from a qualitative study of Continuing Professional Development (CPD) in Information and Communications Technology (ICT) for school teachers in Key Stages 1–4 in England. The research aimed to identify 'effective' CPD, by collecting accounts from teachers, senior leaders and CPD providers, in which they described the key features of ICT CPD which made a difference to teachers' use of technologies in their practice, based on their experiences. The research questions were:

- What models are there for ICT CPD?
- What are the key factors in ensuring that ICT CPD affects pedagogy and practice?

1.2 Models for ICT CPD

Models for ICT CPD are highly individual and varied. In the vast majority of cases, the headteacher is the key player in terms of shaping ICT CPD, according to what kind of 'vision' they have of technologies and of teacher development generally within their school. They have the main role as gatekeeper to different forms of provision within the school, and determine access to other forms of provision outside the school or involvement of external agencies. Outside agencies (Local Authorities (LAs), City Learning Centres (CLCs) and commercial companies, for example) can determine models available to teachers outside the school environment but their effectiveness is greatly affected by the ways in which the school supports the strategies being advocated. Views of what can be gained by schools from 'outsiders' are deeply divided and the involvement of external expertise is a main distinction between types of provision.

The research found that the dominant model across both primary and secondary schools was school-based and 'in-house' CPD. There was minimal involvement of Higher Education, other schools or freelance providers in ICT CPD. LA provision was more prevalent, though this varied greatly between schools within the same Authorities. Commercial companies were drawn on mostly to provide one-off skills training sessions to accompany the purchase of new software (such as interactive whiteboards (IWBs)) and were rarely involved in pedagogical development. Nearly all participants reported a shift away from course-attendance as a main CPD experience.

Schools provided in-house CPD in the following ways:

- 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.

Providers of in-house CPD were mostly school-based, according to the teachers and headteachers who were interviewed as part of the study. 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. There was a belief among most headteachers that outsiders would not provide the most appropriate CPD for their school and that, financially, it was not a priority to spend on external expertise or for staff to attend external courses. There was fairly widespread resistance to covering lessons to allow teachers to attend CPD during the school day, when it was perceived that they could be fully trained in after-school sessions.

Models involving external providers are extremely varied, because they often develop bespoke CPD or adapt generic approaches according to:

- a commercial interest in selling/supporting their particular software
- the results of audits carried out by various parties (the school, the LA, the company) which indicate dominant skills needs among staff
- school-generated requests for particular training in response to policy initiatives such as the adoption of learning platforms
- a provider remit to develop subject-focused pedagogy
- a provider commitment to professional development by supportive networks.

The other 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'. Primary school teachers were far more likely to experience collaborative approaches to ICT CPD as part of the school CPD strategy. In both primary and secondary schools, teachers and senior leaders reported 'unofficial', informal, self-initiated meetings with colleagues after school or in non-contact time as particularly effective for developing ICT practice, but this did not always feature officially as CPD and was often undertaken in teachers' own time.

Models of provision by external bodies were highly varied. In some cases, providers delivered whole school or departmental sessions based on skills training. Other providers worked closely with individual teachers or groups of teachers to develop planning and worked in classrooms, demonstrating teaching approaches, team teaching and supporting the class teacher in trying out new pedagogy. Most providers tried to build in opportunities to make return visits to schools to ensure that some form of follow-up activity was taking place to help the teachers to embed the new technology in their classes.

1.3 Key features to ensure ICT CPD is effective

Many of the features of effective ICT CPD can be attributed to teachers learning from each other within schools which have a strong sense of community and a shared ethos of learning among the staff. In particular, there are non-hierarchical divisions between 'experts' and 'non-experts' with ICT, and high value is placed on the sharing of expertise between staff within 'mixed ability' groups. The most important feature is that teachers who have more experience are given opportunities to share with those who have less. 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.

Although talking with colleagues in school is extremely important, there can be a tendency for schools to become 'inward-looking' where there are limited opportunities to see how technologies are used in other schools. It is important therefore to recognise the need for 'outward-looking' aspects of successful ICT CPD. The judicious use of external and internal expertise is an important factor in introducing teachers to new ways of working, including in schools which appear to have successful in-house approaches to CPD. The involvement of external expertise needs to be carefully managed by senior leaders, however, so that it complements individual as well as school needs and is not just used to satisfy apparent 'gaps' in provision.

The following features were factors which ensured CPD positively affected practice:

- **Leadership:** this was considered a prime factor by school staff and external providers. A clear 'vision' for ICT CPD was vital to the success of any approach, and could help manage problems caused by lack of time or lack of funds. Effective leaders made the best use of the expertise of their staff, not just in terms of their ICT skills, but also in terms of setting up collaborative peer learning which made the most of excellent practitioners and good communicators.
- **Time:** this was also mentioned by almost all participants. Teachers resented time spent on ineffective CPD, but there was a positive response to time given to work with colleagues to plan and review classroom

strategies which were immediately practical and could be implemented straight away.

- **Informal learning:** this was a very important aspect of working in a school as an effective learning community. Although informal learning was not something that could be planned as such, it was facilitated by inclusive leadership styles, democratic staff relationships and lively staffroom talk.
- **A sense of community:** this was a feature of effective school-based ICT CPD and included the whole school workforce in collaborative approaches to developing practice by frequent talk about classrooms and opportunities to network with colleagues.
- **Clear links between CPD and practice:** CPD activities have to be immediately applicable to the classroom and ICT has to have a clear purpose in enhancing learning. At best, CPD takes place in classroom contexts, with colleagues and external experts working together to try out new approaches.

The following forms of CPD were found to positively affect practice:

- **Learning with colleagues in small groups:** for staff with positive accounts of ICT CPD experiences, there had been a trend away from whole-school 'Inset sessions towards group work as a valid form of CPD activity. Groupings differed according to skill levels, subject or software interests, and were frequently the main vehicle for discussing practice and planning new approaches.
- **Working with newly qualified and trainee teachers:** this was a consistent theme in teachers' and senior leaders' accounts of professional development opportunities. The contribution of new teachers to the ICT professional development of established staff should not be underestimated. They can inform and inspire the work and practice of other staff as a result of their understanding of the potential of ICT to support teaching and learning.
- **Observation:** opportunities to observe colleagues teaching using ICT brought clear benefits, but was very rarely experienced as part of planned CPD for most teachers, except in one LA where it is part of a CPD strategy involving observing external experts who visit classrooms to teach.
- **CPD within classrooms with pupils:** there was a lot of positive experience of opportunities to work with external experts using ICT within classrooms.
- **Subject specialist CPD:** this was a very strong need among secondary teachers, and was met by access to subject associations and LA specialists, but was not well developed within schools.

- **Ownership of equipment:** the need for ownership of equipment to facilitate 'playing with kit' was a consistent factor in developing confidence, mentioned by both senior leaders and teachers.
- **Working with the wider school workforce:** working with teaching assistants (TAs) and learning support assistants (LSAs) to develop ICT practice was a frequent positive and helpful experience mentioned by senior leaders, but far less by teachers.

1. 4 Issues that inhibit effective ICT CPD

Teachers frequently noted that a lack of intellectual challenge is a demotivating factor in experiencing ICT CPD. They were critical of 'just practising' skills where this did not link with deeper consideration about pedagogy. They were highly sceptical of what they perceived as the rhetorical over-selling of technologies, and reported occasions 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.

It is important that CPD encourages innovation and excellence as well as addressing deficit among teachers' use of ICT. Several teachers commented on ICT CPD being unchallenging and aimed at raising all teachers to a common basic standard, rather than developing their expertise as individuals. This is also reported by commercial providers, in their accounts of what they are asked to do when providing ICT CPD. There appears to be a tension between addressing individual and whole-school development needs. Teachers report that the latter usually dominate the CPD agenda. The subject needs of teachers are also frequently not a priority in secondary school provision, and in-house expertise can be lacking here, according to teachers' experiences.

Lack of adequate access to technology was reported to have a seriously detrimental effect on teachers being able to take ownership of how to work with technologies and develop confidence by embedding them routinely in everyday practice. Despite reports of schools being well equipped centrally, 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. This is compounded by lack of ownership of equipment that is additional to centrally stored kit, so that teachers cannot experiment at home by, for example, having more laptops with appropriate software.

A very strong message emerging from headteachers was that funding for ICT CPD should be ring-fenced. 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 primary schools. The use of funds is also problematic, however. There is a tendency in some schools for ICT CPD to be heavily linked with buying in particular products from commercial providers rather than learning how to use a range of software. The free-market context which currently links a lot of CPD to purchasing policy for particular technologies is not necessarily beneficial for pedagogical development. 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. Despite all this, there are clear messages about the features of effective CPD and what it takes to develop them.

2. Introduction

This is the second report from a research project carried out by Becta into Continuing Professional Development (CPD) for Information and Communications Technology (ICT) for teachers in Key Stages 1–4. It presents the findings of qualitative research into effective ICT CPD carried out with teachers, headteachers, senior leaders, ICT Co-ordinators and providers of CPD including representatives from commercial companies, Higher Education Institutions (HEIs), Local Authorities (LAs) and City Learning Centres (CLCs). A series of semi-structured face-to-face interviews, telephone interviews and focus groups was used to gain accounts of ICT CPD from these participants. The aim was to collect qualitative data about the features of effective ICT CPD, based on experiential accounts given by the various players. The term 'effective' is used throughout the report to indicate the subjective perceptions of key players concerning the difference which CPD has made to practice. It is not in any way an attempt to provide a measurable indication of 'effectiveness'. It rather focuses on the importance of teachers' engagement with ICT CPD activities and what features of those activities are seen to support teachers and enable them to take risks and change their usual practices.

This second stage of the research followed a literature review of studies of ICT CPD and generic literature on effective CPD (Daly *et al.*, 2009), which found that in many instances insufficient attention was paid to the needs of individual teachers and how they experienced CPD. Teachers' personal and individual responses to CPD were identified as crucial to the implementation of changes in practice, and to shifting deep-seated beliefs which can inhibit openness to trying different approaches. This stage of the research investigated teachers' accounts of their experiences of ICT CPD and their perceptions of whether it had affected their practice and in what ways. The research also asked key providers of ICT CPD for their perceptions of effective CPD approaches.

3. Research design

The research aimed to identify the features of ICT CPD which made a difference to teachers' use of technologies in their practice. There were two research questions:

- What models are there for ICT CPD?
- What are the key factors in ensuring that ICT CPD positively affects pedagogy and practice?

This was not an in-depth study of the teachers themselves in relation to their integration of ICT into practice, but an attempt to capture essential aspects of their experiences of CPD approaches which had 'made a difference'. We did not seek detailed biographical data about individual teachers, since we were not testing a hypothesis based on for example, gender, age or subject discipline regarding effectiveness of CPD. Within the scope of the study we were able to investigate approaches which appear to have broadly positive effects reported by teachers. We also aimed to investigate approaches which school leaders and providers of ICT CPD reported as being effective in bringing about changes in practice. We sought evidence of the features of effective ICT CPD based on their accounts. Interviews and focus groups were the primary means of data generation among teachers and interviews were carried out with school leaders, ICT Co-ordinators and CPD providers.

For all participants, interviews of 30 minutes posed a series of questions that prompted them to recall and reflect on salient aspects of their ICT CPD experiences. In total 26 teachers were interviewed (13 female, 13 male), 13 headteachers/senior leaders, 9 ICT co-ordinators/e-learning leaders, and 17 ICT CPD providers (representing commercial companies, LAs, CLCs and HEIs). The headteachers included several members of Becta's Leading Leaders Network of school leaders who are recognised as having particular strengths in developing ICT in their schools. Within a small-scale study, the sample was constructed by contacting potential participants via networks which were available to the team, by links with Becta and through the Higher Education Institution involved. The research aimed to identify a range of positive examples of ICT CPD, examine what can be learned from them and identify key features to inform future CPD design based on the findings – what are the key factors in ensuring that CPD positively affects practice, and what models exist as contexts for these factors?

The interviews were semi-structured, with most of the interview time given to inviting the teacher and headteacher respondents to give accounts of their previous

experiences of ICT CPD. The teacher participants were invited to elaborate, reflect on what happened, identifying the key features, and consider how their practice had been affected by the ICT CPD, either as a brief narrative or occasionally through more extended accounts. Narrative methods have the flexibility that is necessary to capture and record the complexities of human experiences (Czarniaswska, 2004; Daly *et al.*, 2007; Elliott, 2005; Greenhalgh *et al.*, 2005). These methods can contribute to the critical evaluation of a variety of learning contexts, where it is important to understand the experiences of the key players. They are particularly helpful in contexts which are extremely complex, because narratives provide full and 'unsanitised' accounts of what actually happens to people in learning situations, including emotional and motivational aspects which affect how teachers as learners respond to the situation in which they find themselves. The methods necessarily elicit subjective responses, and apply to research situations where it is important to gain insights into participants' feelings, and responses and opinions where these have a bearing on the effectiveness of what is being investigated. The report from the literature review (Daly *et al.*, 2009) in the first stage of the project confirmed that teachers' ICT CPD involves highly complex human, social and psychological factors, particularly to do with changing 'deep-seated beliefs' in order to develop practice beyond a surface adoption of technology. It was deemed important for this next stage of the research to gain understanding of the teachers' responses to ICT CPD, and how this affected the integration of technologies into their practice. Teachers, headteachers, ICT co-ordinators and providers were asked to reflect on features of ICT CPT which they deemed to be significant based on their experience and role.

Extensive notes were taken during individual face-to-face and telephone interviews.. Focus groups were used where possible to prompt teachers to compare experiences and draw out further reflections on the features of the ICT CPD. These were filmed for ease of analysis in identifying individual accounts offered within the group. Each set of interview notes (from teachers, school leaders and CPD providers) was then read and the emergent themes for each group were highlighted and cross-referenced so that the most significant features could be identified and any differences in views between the groups established.

4. What models are there for ICT CPD?

Accounts of models of ICT CPD were given by key players with major responsibility for provision: headteachers, LA personnel, CLC managers, university programme leaders and commercial companies. Models for ICT CPD are highly individual and varied. In the vast majority of cases, the headteacher is the key player in terms of shaping the ICT CPD, according to what kind of 'vision' they have of technologies and teacher development generally within their school. They have the main role as gatekeeper to different forms of provision within the school, and determine access to other forms of provision outside the school or whether to involve external agencies. Outside agencies (LAs, CLCs and commercial companies, for example) can offer alternative models for CPD outside the school environment but their effectiveness is greatly affected by the ways in which the school supports the strategies being advocated. Views of what can be gained by schools from 'outsiders' are deeply divided and the involvement of external expertise is the main distinction between types of provision. There was a belief among most headteachers interviewed that outsiders would not provide the most appropriate CPD for their school and that, financially, it was not a priority either to spend on external expertise or to pay for staff to attend courses. There was fairly widespread resistance to covering lessons to allow teachers to attend CPD, when it was perceived that they could do this in after-school sessions. At the same time, however, most teachers had not experienced positive ICT CPD provided within their own school, though there were exceptions to this in schools which could be identified as leading-edge in the use of technology.

The data from interviews and focus groups found that the dominant model for ICT CPD across both primary and secondary schools was school-based provision. There was minimal involvement of HEIs or freelance providers in ICT CPD. LA provision was more prevalent than other external types, though this varied greatly between schools within the same LAs. Commercial companies were drawn on mostly to provide one-off skills training sessions to accompany the purchase of new hardware and software (IWBs, for example) and were rarely involved in pedagogical development.

The other main feature which distinguishes 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 which is usually provided by a single 'expert'. Primary school leaders were far more likely than secondary leaders to establish collaborative approaches to ICT CPD as part of the school strategy. In both primary and secondary schools, teachers reported 'unofficial', informal, self-initiated meetings with colleagues after school or in non-contact time as particularly useful for developing ICT practice, but this was rarely identified by them as CPD and was undertaken in their own time.

4.1 School-based provision

The majority of ICT CPD experience was 'in-house', that is, it took place on school premises, and took the following forms:

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

Providers of in-house CPD are mostly drawn from the school's own staff. Although some use is made of external providers who visit schools, the vast majority of ICT CPD experienced by teachers was provided by their own colleagues. Teachers valued working with colleagues who had developed particular expertise, though were not necessarily ICT experts. In one account, it was expected by senior management that if a teacher became very proficient in using ICT in their teaching, that they would become one of the school-based CPD providers, running after-school sessions for colleagues. Because so little time is dedicated to ICT CPD, there was an almost unanimous response from teachers that they did not experience enough of it to support them to make the developments they would wish. Headteachers had a somewhat more positive view than teachers of what could be achieved within the time available. It was more likely for the headteacher to take a personal lead in ICT CPD in primary schools than secondary, and to be in attendance at regular CPD sessions held after school.

Staff with specific responsibility for leading ICT development within the school

ICT co-ordinators were often responsible for a large part of formal in-house CPD provision in both primary and secondary schools. It was reported by teachers however, that the most effective professional development frequently happens in informal meetings with non-specialists in ICT. Teachers felt that learning with colleagues who had more experience and were effective classroom practitioners was more effective than being 'trained' by ICT specialists and attending whole-school Inset sessions. There is a strong message that the most effective provision is made by fellow teachers who are prepared to share their expertise in both formal and informal sessions. In secondary schools, ICT co-ordinators may be expert in teaching pupils and in training in particular uses of technology, but they do not necessarily understand the subject-specific needs of staff.

They are not necessarily the most appropriate providers of CPD:

> '…the school organised Inset…inferior to what we had with [Local Authority course]…it was generally members of the school who were doing it as an add-on to daily workload and while they were adept in it as ICT people themselves, they weren't very good at teaching it to adults within a learning context...they were used to teaching students the basics of how to use it...not how to use the skills from ICT to teach another curriculum subject.'

There can be an expectation by senior managers that, because they have ICT expertise, ICT co-ordinators are the obvious choice to provide staff CPD. This is not necessarily the case. In primary schools there was a rather different scenario, because ICT co-ordinators frequently teach across the curriculum and have detailed knowledge of the various demands of each subject area as well. They are also more likely to work in cross-curricular ways in their own teaching and therefore have an understanding of the needs of teachers within different curriculum areas. Frequently, and unlike their secondary counterparts, they have not come from an ICT specialist background. It is difficult to generalise about the roles of ICT co-ordinators in the CPD process across primary and secondary schools because of the very different ways in which teachers develop specialisms along with broad expertise, and the unique features of different schools. It can be stated, however, that it seems more common for primary school teachers to report that their needs as individuals are understood by leaders of ICT CPD within their schools.

In secondary schools, the appointment of staff with a key responsibility for supporting professional development in ICT has had positive effects, according to teachers who work with them. These staff have a variety of titles, including 'ICT Champion'. Again, these teachers do not necessarily come from a specialist background in ICT, but have developed knowledge and understanding via personal enthusiasms, being exposed to innovative external CPD programmes, or from prior work experience. Essentially, they have strong inter-personal skills, flexibility and an awareness of the concerns and needs of teachers who lack confidence in ICT. Such key roles can be effective in raising the profile of ICT within the CPD agenda for the school. Such staff were valuable for suggesting innovative ideas, introducing new technologies, 'trouble-shooting' and providing moral support. These teachers were unlikely, however, to have the time and specialist subject knowledge to be able to support significant curriculum development or pedagogical change because they cannot get involved in the detailed planning and lesson reviewing which was reported as necessary to introduce effective new practice. There is a lack of development of ICT CPD at subject level in secondary schools which does not seem to be addressed in a systematic way. This is significant in considering who the key providers of school-based CPD should be, and how they should be prepared for their role.

4.2 External provision

Local Authorities

There were striking differences in relationships between schools and LAs. These were not just based on being opted-out from LA control. Schools within the same LA had widely differing relationships with their Authority. Teachers' accounts of the same LA ranged from 'The provision is amazing', '[The school managers] think the LA has not got much to teach us' to 'The LA doesn't like our school'. One teacher's account captures the degree of isolation which the school actively cultivated, an attitude which was reported by other participants in relation to their schools and the LAs:

> 'Our CPD is completely within [the school], we try not to get CPD from anywhere, we have masses of TLRs [Teaching and Learning Responsibility payments], they are all doing assistant head roles. Whenever a senior job is going, no one from another school can ever fill it because they haven't had the experience, so it's all very 'within the school, within the school' and therefore the LA thinks we don't bring people in…we use people within the school.'

Overall, there was a trend towards an inward-looking approach to ICT CPD. Some senior leaders expressed frustration with LAs who were 'too slow' with ICT uptake, or who had outdated policies such as 'banning' personal internet access for teachers on their school laptops. It was clear that in some cases, the LA was not in touch with more advanced thinking about using ICT, and school leaders in these authorities valued autonomy in choices about firewalls, selective blocking of social networking and choice of equipment. Other headteachers cultivated a different kind of relationship with the LA, however, where the school was 'ahead', and considered it important to be in a 'giving relationship', offering free access to the school VLE and using key staff to disseminate their practice to other teachers in the authority. Another headteacher explained that she did 'trade-offs' with the LA, offering a day of her time in an advisory capacity in return for occasional input from the authority.

There is a serious consequence of a breakdown in the relationship with the LA for many teachers. The important point is that teachers' opportunities to find out for themselves were shut down by some of the attitudes adopted by school leaders. Some schools were very inward looking. There was a tendency within inward-looking schools to be fixed on very narrow but high-stakes goals which inhibited creative development of ICT practices, with a tendency towards CPD being aimed at producing standard ways of teaching and improved test results. A number of primary schools did not take advantage of LA opportunities for ICT CPD, due to a perception from senior leaders that they do not have time for ICT because they 'have to meet the targets for literacy and numeracy'. This is a worrying trend, and presents a picture of ICT CPD being marginalised and having to demonstrate relevance to school leaders who are coping with competing agendas.

There is a lack of consistency in the provision of ICT CPD across different LAs as reported by teachers. Some very positive accounts of working with LAs were given. In one LA, teachers and senior leaders report co-operation across schools to be a major feature, and an infrastructure is dedicated to achieving that by 'brokering' the effective deployment of Advanced Skills Teachers (ASTs) within primary schools. The LA works with a commercial company to organise the ASTs, who are Leading Teachers for ICT, to run ICT CPD sessions in schools which are based on carefully audited needs of individual teachers. The deployment of ASTs is varied according to the needs which are identified. The ASTs are enthusiastic and have high credibility with the staff they visit because of their current class teacher roles. The involvement of the LA ICT CPD team leader is central to the effective deployment of the AST expertise. Nonetheless, within this LA we found an example of a headteacher whose ICT CPD policy was based on highly independent provision, which positively avoided working with the LA.

Teachers from a different LA felt their provision was excellent and report highly enthusiastic responses from other staff. This LA runs a course quite separately from school provision, and pays for staff attendance. It is reported as being excellent because of the high-quality pedagogy of the trainers – they work collaboratively, and constantly embed the technology ideas in 'real' subject scenarios which the cross-curricular groups can recognise and adapt to their subjects and learners. In the same authority, however, some school leaders were perceived by teachers as believing the LA has nothing to offer. In a different authority, an expert AST, who is in demand nationally for the quality of his CPD, is rarely used by his own LA to train its own teachers. He is mostly used by his own school (which is already over-subscribed and very successful) and by other LAs and institutions, but not by the LA which is paying him. Opportunities to pool human resources are lost in this example, as are opportunities to develop excellence (rather than focusing on meeting minimum capability in ICT). With the exception of one LA, there were no clear avenues through which ASTs can develop their practice at LA or national level. In other words, although there is some scope to disseminate excellence through LAs, there is little support to develop the practice of existing innovative practitioners. This is dependent on opportunities available within ASTs' own schools, which may be limited by schools' individual circumstances, and/or involve ASTs in moving into management (rather than remaining focused on classroom practice).

City Learning Centres

While CLCs were not intended to provide interventions in schools, they provide services and opportunities including sharing practice in the use of ICT among teachers. CLCs again have very differing relationships with their LAs, which affects forms of provision and ongoing sustainability of approaches to ICT CPD. Some CLCs have a highly integrated relationship with LAs, with common goals and shared posts for developing ICT expertise across the borough. Others have developed independently, with less of a shared vision of CPD with the LA and others have a

somewhat 'difficult' relationship in terms of agreeing a common vision of CPD, how it can be provided and by whom. CLCs can provide an ICT CPD experience outside the school and, in areas of high socio-economic deprivation, can provide additional support and access to high-quality professional development for teachers working in schools in challenging circumstances. Patterns of provision are highly individual, and include accredited online courses in digital creation for teachers, regular after-school courses at the CLC, training developed on a departmental basis, training carried out on behalf of a software developer and adapted to local needs, and long-term programmes involving teacher enquiry and utilisation of Web 2.0 technologies. There is an area of rapid development and change here, which is in need of further investigation. Teachers spoke with enthusiasm about their experiences of ICT CPD with CLCs. The key features that made an impact were:

- the expertise levels of the CLC staff, in terms of creative and relevant applications of technology to real classroom contexts
- the access to innovative teaching methods with ICT which were not available within their schools
- the access to other teachers, and opportunities to compare experiences and learn collaboratively in groups of committed staff
- exposure to 'exciting' technologies, such as animation software, digital film and audio editing, visualisers and electronic voting systems
- exposure to courses provided for pupils from which their accompanying teachers can learn.

Professional associations

ICT CPD programmes offered by professional associations can focus either on a specific subject area, such as English, or on ICT across different subject areas and institutional contexts.

Evidence of ICT CPD offered by a subject-specific association adopted a deficit model of CPD provision, in so far as it aimed to address the problem of the inadequate use of ICT in English as a subject area at secondary level. The CPD offering was a one-off course, aimed at, and taken up by, schools which had traditionally made relatively little use of CPD and provision focused on developing teachers' ability to use one particular technology (IWBs). The provision was well received, because it focused on teachers' own subject area/curriculum focus.

Evidence of ICT CPD offered by a professional association, open to anyone with an interest in developing their use of ICT, adopted an excellence model of CPD provision, in that it aimed to enable teachers to develop and disseminate innovation in ICT-based practice. The focus here is not on meeting subject-related standards, but on contributing to a community's knowledge base, and researching ICT-based practice. CPD is accredited by an HE provider, but the focus remains on developing

practice rather than gaining academic qualifications *per se*. This is achieved through a membership structure which frames CPD as a continuous, rather than a time-limited, process, and which requires members to link their CPD to their institution's ICT development plan. Because membership is organised around ICT issues, rather than subject/curriculum issues, the association is able to sustain networking/interaction between teachers at an international level – rather than LA or national level. This also means that the distinction between CPD and ICT advocacy is blurred, with members providing professional support to each other to experiment with ICT in their practice and in their schools. A distinctive feature of this type of provision is that it provides a forum in which teachers gain support for engaging intellectually with practice over a relatively lengthy period of time, beyond the scope of a specific, and time-limited, CPD intervention.

Hardware and software developers

Hardware and software developers offer a range of supportive activities for teachers, to enable and encourage the use of their products in schools. These activities vary according to the kinds of product the developer is promoting (software or generic/specialist hardware, for example, or a specific technology or a managed ICT service, a subject specific or a whole-school resource). In no case that we identified was CPD a specific business activity within an educational ICT company; by this we mean that CPD was not designed to generate profit *per se*, and was usually offered at cost.

The types of provision offered by developers can be broadly divided into two kinds: software specialist and hardware-led.

Developers who focus largely on software products tend to offer specific one-off interventions shortly after product sale. This can consist of a 'twilight session' (one or two hours after school), one or two half days, or a whole day (such as an Inset day). This intervention is usually free to schools, although schools are expected to pay for or provide necessary cover – this, according to developers, is a significant organisational problem and disincentive for schools to offer CPD and prevents CPD from becoming a business activity in its own right for companies (there is insufficient demand/resources among potential customers). These introductory interventions tend to be divided equally between skills training in technical functionality (how to use the software) and use in practice (how to use the software in specific instances or teaching activities). Many developers offer follow-up interventions to schools at cost (in the region of £300–£500 a day) and these usually focus on embedding ICT in practice, or developing ICT practice in one particular topic area. Many developers note that few schools take up this offer of follow-up CPD work, but also note that this is not primarily a cost issue, but an organisational one. These organisational issues are explored further below, but include challenges such as the difficulty of releasing a group of teachers for follow-up work, the difficulty of getting hold of appropriate people, and the difficulty of deciding what follow-up work is actually required

(identifying 'needs' at individual and organisational levels is not a straightforward matter).

Developers who focus largely on hardware products, including hardware bundled with software, tend to adopt a 'withdrawal model' of CPD, in which the aim is to build sufficient expertise in schools to enable the developer to withdraw from providing significant support. This model can take the form of setting up teacher networks across different schools/nationally, to enable teachers to support each other as and when needed; designing training interventions with a view to supporting the 'cascading' of skills and knowledge (by for example focusing on developing the skills of specific individuals in schools); or showcasing particular technologies or combinations of technologies for the teaching of specific topics, in the hope that teachers can then adapt models of ICT use to other topics or curricular areas.

All the developers that we interviewed indicated that they did not wish simply to sell products, but also to enable teachers to develop and improve their practice. They usually employ experienced teachers to deliver training in schools, to ensure that specific interventions are 'relevant' to teaching practice, and not just focused on technical functionality. Some specifically fund networking opportunities for teachers, to enable teachers further to determine and articulate their own CPD agenda. However, developers face a difficult choice. Because CPD is not commercially viable in its own right (that is, there is no significant market in ICT CPD), the costs of providing CPD beyond training in basic technical functionality or product support are prohibitive. But, because they do not link into existing CPD structures in schools (or because there are no existing ICT CPD structures in schools), they cannot design their (limited) CPD interventions in a way which might significantly inform practice (developers frequently state that they cannot find time in teachers' schedules to provide even basic technical training). Consequently, although providers claim to be selling 'solutions' rather than products, most interventions by providers consist of skills training in functionality and showcasing of pedagogic possibilities, but relatively little long-term work. Claims that products are under-used or used ineffectively in schools, that funding is inefficiently allocated due to alternating policy initiatives, that Inset days are treated as breaks from the rigours of work rather than as opportunities to reflect on practice, and that contemporary educational culture prevents experimentation, innovation and imaginative pedagogy in classroom practice, are frequently made. The current policy climate is frequently criticised. One provider, for instance, argued that schools have too much autonomy in terms of buying products, which makes for a highly fragmented market, but too little autonomy in terms of how or what to teach. Schools have been given choices over the wrong kinds of issues (which software to buy, for example), and have little scope for making choices where these matter (such as priorities for curriculum development).

However, it should be noted that such frustrations also emerge from competitive advantages between developers: for instance, software developers marginalised by recent policy emphases on learning platforms in schools tend to argue that ICT is

becoming a delivery-focused management tool rather than a creative, imaginative teaching tool in schools, a complaint not voiced by developers and re-sellers of learning platforms. Frustration also seems to have emerged in the wake of ICT funding no longer being ring-fenced: developers have noted that if funding is not ring-fenced for ICT products, spending on ICT products collapses. In other words, developers seem to agree that there is little apart from funding incentives which is pushing schools towards having good levels of technology options and associated CPD.

A couple of developers we interviewed had managed to establish long-term relationships with schools and LAs, and felt that their CPD offering was a strong one. These developers tended to focus on supporting the integration of a range of ICT products rather than on supporting specific products. These relationships usually required significant, specific funding input, either by the LA in the form of a long-term (three-year) contract, or by the developer, in the form of an investment in market research (paying practising teachers to give them feedback on their products).

5. What are the key factors in ensuring that ICT CPD affects practice?

Whether CPD was entirely school-based, provided through an external programme or involved a variety of key players both internal and external to the school, a range of factors can be identified as affecting the successful application of ICT CPD to changes in practice. These are listed in order of their importance, as suggested by the data collection activities as well as by the literature review.

5.1 The factors which determine whether CPD affects pedagogy and practice

Leadership

There was a common response among teachers, senior leaders and external providers that a key to effective ICT CPD lies with the headteacher's 'vision'. Staff development grows where the headteacher gets the best out of the staff by harnessing their enthusiasms and expertise, and using this as the main basis for CPD, drawing judiciously on expertise from outside to support this. The head does not have to be an ICT enthusiast as such, or to have ICT experience – this was agreed by both teachers and headteachers. ICT integration has grown in schools where the headteacher has drawn out the best from the staff, not just in terms of ICT skills. This has meant recognising teachers with pedagogical strengths who may not be senior staff or particularly expert with ICT, and encouraging them to become involved in leading ICT CPD. Headteachers have facilitated unstructured group-learning as part of CPD, and developed an ethos in which teachers are encouraged to 'take risks' with their usual pedagogy, for example in abandoning a teacher-centred method which has focused on passive learner roles, and adopting instead group work using the internet in classrooms as a resource for guided independent research. Leadership is also necessary to draw out the best from external provision, and visiting providers were critical of the ways their expertise was not optimised in some schools because no one had thought sufficiently about what the staff could really gain from the CPD. This was manifested in a variety of ways, including lack of staff commitment to the sessions, and lack of appropriate technical preparation by school technicians to allow certain types of CPD activities to occur.

Leadership involves being very clear about what the ICT 'vision' is, and utilising both internal staff and external provider expertise in a coherent way towards clear goals. It includes being innovative and having the ability to let some things go as part of the change process. One headteacher's policy includes 'innovation and abandonment'. As new things evolve, others are abandoned, or the staff (and the curriculum) become overburdened. This is often difficult, because teachers do not like letting go of familiar practice which 'works'. This was reported by ICT co-ordinators as an obstacle to motivating teachers to change in situations where there were no obvious 'problems' in terms of pupil achievement and enjoyment of lessons. It can be hard to

encourage teachers to believe that using technologies is not just an answer to a problem, but that it can enhance learning and engagement where pupils are already achieving well. In these situations, complacency can be a problem, and it is harder to foster critical reflection on practice. Leadership is also necessary to 'give permission' to abandon some practices, so that teachers can focus time and energy on developing new ones.

'Succession planning' was also mentioned as vital. Several headteachers reported how schools were negatively affected by changes in the leadership, where new heads arrived who lacked commitment to ICT. It was reported that a change of headteacher can have a very significant impact on a school that is making progress in the use of ICT. Changes in staff development priorities mean that there can be a loss of impetus for some teachers to continue progressing.

Time

Time is a consistent factor across both teacher and senior leader accounts of providing effective ICT CPD. But it is the *use* of time that emerges as the most critical issue on careful examination of the accounts. There were two main types of time shortage:

- Lack of time to learn new technical skills to high confidence levels for use in the classroom, and
- Lack of time to consolidate knowledge to use technology most effectively for learning.

Having no time to consolidate professional learning is stated as a problem by the majority of teachers and many headteachers. It was acknowledged by some headteachers that their staff might have a different view of the amount of time they needed. In one paired interview with a headteacher and ICT co-ordinator, the ICT co-ordinator was quick to point out that the teachers' views on needing time were different from the headteacher's (teachers felt it was the main obstacle to CPD), and the headteacher found that genuinely surprising and interesting. Another headteacher stated that the problem with ICT CPD was teachers having no time to reflect on their practice involving ICT. Where time was available, then the emphasis was on rectifying deficit skills or learning to use new platforms or IWBs.

Several teachers comment on too much CPD time being spent on mastering technical skills. They are taught only 'how to use it' and also 'often given software to try out – no time to learn how to use it', and lack follow-up time for planning. Teachers need more time to explore the technology following training sessions, to discuss practice with colleagues, and to invent and develop experimental approaches to teaching. However, time for reflection was built into some regular staff meetings where an ICT slot was a regular feature. Having time to do this on a regular basis as part of after-school CPD activity was more likely in primary schools.

Changing existing approaches requires sustained thought, discussion and revision, the time for which is often lacking – as both teachers and providers repeatedly state. In addition to this, teachers can feel overwhelmed by the sheer amount of technology available to them, and the lack of time to learn about which is the most beneficial for their contexts. As one teacher indicated: "I find there is just so much out there that sometimes I can't see the forest for the trees". They have insufficient time to research and understand developments beyond their schools, and to find out about what ICT CPD might be on offer. They also need more time to develop coping strategies for the sheer rate of change, and feel anxious about 'keeping up'.

Most providers structure their CPD interventions so they come into schools more than once. This allows issues arising from practice to be dealt with over time. This model works less well, however, if between sessions, teachers have made little progress themselves, often due to lack of time. The work teachers put into implementing the CPD activities they've been doing with providers varies significantly from school to school. The issue is therefore not so much the lack of time in the short term, but in the long term, over a year or more. This is important as it takes a lot of time for teachers to rewrite teaching plans and schemes of work; if ICT CPD focuses on short-term interventions, this reduces the scope for change in practice, which takes a lot of time in schools, owing to the nature and organisation of teaching. In some schools, rewriting lesson plans is included in dedicated weekly staff after-school CPD time, but this occurred in a minority of cases among the staff we interviewed. This practice was found to be extremely helpful (for all pedagogical development).

Teachers state that they want to see technology being used in real and convincing situations, preferably in their own classrooms, and do not appreciate being told to go away and try something out on their own, following specific CPD interventions. Frequently, trying it alone is not a priority in managing their workloads. This is not incompatible, however, with the desire to have access to equipment, especially a laptop, for home experimentation and for use informally for planning with colleagues. Part of the problem with having to try out new software alone was the need to fit this into a busy day where access is needed to school equipment. With more flexibility to experiment at home, teachers would feel less pressurised to master new skills within limited amounts of non-contact time at school, where there are many competing demands on Planning, Preparation and Assessment (PPA) time. Teachers found it most beneficial when CPD also involved time for planning so that concrete development took place which actually fed into classroom teaching. At best, a CPD programme builds time for teachers to plan together and then review with colleagues how the teaching has gone.

Software and hardware developers noted that lack of time for CPD meant that existing slots are often treated as a break from work, rather than an occasion to reconsider practice. In other words, what is lacking is not more twilight sessions or

Inset days, but opportunities across the school year to review practice, including with colleagues and others. The problem of 'lack of time' is not just about finding more time in the school year then, but opening spaces in teachers' daily lives to think imaginatively about how they teach. This issue is to be addressed by recognising teaching as a creative, open-ended and professional practice, rather than just about the implementation of teaching skills and competences. This is symptomatic of CPD in general, and is particularly relevant to ICT, where a continuously growing agenda of 'skills' to be mastered was reported to dominate provision.

Informal learning as valuable CPD

Learning informally with colleagues was a favoured CPD experience by most teachers, and cited by headteachers as an important strategy. Headteachers support informal ways of sharing expertise and experience by encouraging staffroom talk and building in 'talk time' to after-school CPD. An ICT co-ordinator also used strategies such as starting to talk enthusiastically in the staffroom about a lesson she had seen where a teacher used a new technology effectively, to get staff asking questions about what had happened. These senior leaders were aware of the need to foster informal talk and curiosity about technologies among teachers, and that informal opportunities need to be facilitated and not just left to chance. Another teacher explained that in her school, it was possible to protect non-contact (PPA) time to have CPD conversations with other teachers. A group of expert 'ICT practitioners' noted that they had not been on a course in years – they learned from researching practice, not by internalising the lessons of others. They argued vigorously against 'institutionalised' CPD which ossifies practice and de-professionalises teaching by discouraging teachers from finding out how to improve their teaching for themselves.

For teachers who were not 'expert' ICT practitioners, some of the most effective professional development had happened by accident, as a result of carrying out observation whilst visiting other schools, accompanying pupils on a course to a CLC and observing innovative practice there first-hand, or because of 'a meeting on the stairs' which resulted in an invitation to join an external provider who was visiting the school to teach a lesson using technology. These examples were quoted as the 'best' CPD the teachers had experienced, and they all involve being able to observe more experienced adults working with pupils in authentic teaching situations. The majority of teachers do not get opportunities like this when they are left to chance, but each of them could have been planned as a CPD strategy.

The effective use of auditing of teachers' skills and use of ICT is a further related issue here. None of the teachers we spoke with mentioned that auditing had contributed to beneficial ICT CPD for them. There is evidence, however, that innovative uses of audits being trialled by an authority may provide a new approach to the use of audits, because the process aims to develop 'bespoke' support for staff as individuals and in groups as well as identifying whole-school needs. A highly flexible and differentiated response to teachers' needs by CPD providers is an aim of

the LA. The use of audits to support individualised needs and priorities in this way is still in its early stages, however, and we did not find this to be a common perception of audits as experienced by teachers.

A sense of community

A strong community ethos was considered vital to effective ICT CPD approaches by senior leaders in both primary and secondary schools. They considered it to be very important to enable staff to take responsibility for training each other, by involving a number of teachers in key roles as leaders of ICT training in particular curriculum areas. Informality was a key feature of headteachers' monitoring of the impact of ICT CPD in their schools. In particular, primary school heads refer to 'walking through' the school on a daily basis as a main way of gauging how technologies are being used, and what CPD needs exist. They use these opportunities to talk to children about their learning and what they are doing with technologies. There was a strong sense of shared goals between the headteacher and the staff. The 'walk through' was an important feature of primary schools but was mentioned less among secondary school leaders. It was harder for leaders of big secondary schools to have the same detailed sense of what is going on in every classroom most of the day. While this is delegated to other senior members of staff, it appears to be harder to establish a strong sense of shared community approaches to developing teaching and learning among distributed departments and larger school staffs. Personal relationships within a shared sense of community across the whole workforce are vital:

> 'I just think it's done so badly in schools. You've got the wrong people doing it, buying people in who don't know the school or the constraints of the school system…Good, friendly technicians make a *massive* difference. Anyone in an ICT role should be approachable. If they are a dragon or make you feel stupid, you don't feel at liberty to go and ask them.'

A sense of community is also effective where it underpins the development and sharing of electronic resources as something which teachers do together as a result of reviewing their pedagogy. Teachers and headteachers reported differing examples of the usefulness of shared online areas for joint development of teaching materials by staff.

Clear links between CPD interventions and practice

Where teachers can see the explicit relevance of the technology to enhancing their practice, then motivation increases along with willingness to make the effort and find the time to change. Headteachers emphasised that CPD activities 'have got to be real. Staff have got to understand the purpose of ICT. It must grab the teacher's imagination'. Senior leaders emphasised the importance of 'high frequency' episodes of CPD ('little and often', 'drip, drip, drip'), interspersed with immediate opportunities to try out new approaches with pupils and report back to relevant staff. The impact needs to be immediate, and CPD sessions structured so that this is supported, by building in CPD time to return to see how an intervention has worked.

5.2 The forms of CPD which affect pedagogy and practice

Learning with colleagues in small groups

Learning informally with colleagues was rated very highly by the vast majority of teachers. CPD in small groups is facilitated in many schools, and is frequently available on a voluntary basis. Secondary teachers reported that they relied upon a key member of their department who was more experienced or had learnt something in a previous school, who would willingly show how to work with technology and discuss ideas. Personal relationships were crucial to this positive, informal CPD experience. This is also important because 'keeping up to date is hard'. Teachers cannot know everything about ICT, and they need access to 'anybody who knows a little bit more than you do'. The person does not have to be an 'expert' as such, but a supportive colleague who can share their further experience:

> 'If it's another colleague, and a small group where you can ask questions, I'm more likely to believe it will have an effect. More than a senior leader who is not doing this every day – someone with a new toy.'

From the non-expert 'trainer' point of view, it was important to go on being a learner:

> 'I suppose it is that thing of whether you are an expert or not, because I don't feel qualified to be an expert. Yes, I knew that in that context I was. But I felt that I didn't know all the answers, in a way. And that is what I am like as a teacher, too. I quite like being able to model to students the not knowing as well as the knowing.'

This kind of attitude from a novice ICT 'trainer' was appreciated by teachers who felt that a novice understood their need for a slow pace, and would not perceive them as foolish or too slow in trying out new skills. This was a very common preference expressed among teachers and also headteachers who expressed reservations about 'expert' trainers.

'You normally find that that person [a trainer] finds it hard to come down to your level of understanding. They normally go – oh, you do this, this and this. And that is how it works.' (Teacher)

'We don't want trainers who think they know it all and make the teachers feel they know nothing.' (Headteacher)

One senior leader commented that his school had abandoned information- or demonstration-based whole school Inset altogether, based on evaluating staff responses. Now he leads a policy on staff working in groups of three, which are aimed at building trusting professional relationships in sharing new practices. The school also works with pupils as 'apprentices' who support the ICT CPD of teachers.

Working with newly qualified and trainee teachers

Several experienced teachers mentioned the value of learning with new teachers, both NQTs and trainees with whom they had a mentoring relationship. Being a mentor of trainees gives an opportunity for experienced teachers to observe new ideas being used by trainees who are confident with ICT. One teacher described learning how to use YouTube with pupils because of mentoring an NQT. The mentoring relationship has been a learning experience for both of them. Whilst the NQT needed support with refining timing and learning goals, the mentor learned that YouTube could be used as a valuable and time-efficient resource to stimulate pupil opinion and promote thoughtful contributions to the lesson. Since moving schools however, her new school does not allow access to YouTube, so this is a frustration.

Working with trainees who have ICT expertise is a valuable CPD experience. One primary school GTP trainee had been a Teaching Assistant with particular responsibility for ICT. As a trainee, she currently runs workshops to improve technical skills for staff in Office applications and the new learning platform. Interestingly, however, it was only as a GTP that she had opportunities to observe staff using ICT. Staff in the school generally do not observe each other teaching.

One AST (non-ICT) commented, "I am supposed to be a role model as an AST – but can I use ICT as well as an NQT?" Another teacher reported that the most effective CPD she experienced in four years of teaching was with an NQT. She made a protected free period so that she could talk with the NQT who was confident with ICT. The NQT showed her how to make a MySpace web area for pupils:

'My discussion with the NQT helped me to realise the potential of collaborative online learning – sharing ideas in a group – it developed into my ideas for an asynchronous discussion forum. It affected my approach. The fact she was *so* enthusiastic and showed me the students' sites they had made, their news items...the fact I could *see* it working like that…'

The key factor is being able to see technologies supporting learning *in practice*. In the case of online learning forums and Web 2.0 this might be by seeing the technology in use through online observation and discussion with another teacher. The conversations between teachers are essential, where those who are a little more confident or experienced pass on their knowledge and enthusiasm to those who are less so. It did not take a lot of 'training' to learn to set up a MySpace account. The important point was to see how it was actually being used and to talk with the NQT about it. There is value in facilitating informal CPD between members of staff like this. One senior leader said 'the influx of new teachers coming in is really changing the way I'm looking at CPD…they are providing impetus for other teachers to learn from them'. Effective CPD utilises the knowledge and confidence of these 'novice' teachers.

Observation

A very strong feature of effective ICT CPD was observing other teachers in school, online and across phases: 'The best professional development I've had is seeing other people doing [ICT] with kids'. However, opportunities for this were extremely limited among the teachers we interviewed. There is a strong 'anti-cover' culture within school leadership which restricts opportunities for teachers to observe each other and learn by team-teaching. Financial constraints undoubtedly contribute to this, but so does a view that teachers should spend the maximum time possible in class teaching their own classes – time spent learning in other teachers' classrooms is not viewed as worth the cost to pupil learning time by having cover lessons. This is a serious and persistent dilemma, as teachers are nearly always expected to learn 'by proxy' – that is, not by actually being in a classroom with pupils and seeing how effective teachers work with ICT in context.

One teacher, who had been teaching for three years, had extremely positive experiences of observing others using ICT during his PGCE placement, but none had been available to him since qualifying. He had an opportunity to observe as part of a visit to another school whilst on interview, and this was 'almost by accident'. It was an extremely influential experience for his own practice: "It was amazing to just see this teacher just in full swing with it, and I thought part of it was she's more experienced than me". But it was entirely due to chance that he had seen another teacher use technology. Very few of the teachers had ever observed another teacher using ICT since qualifying to teach, and this was voiced as a lost opportunity to learn. One secondary teacher had been teaching for nine years, and had never observed another secondary teacher using ICT. As an AST for Modern Foreign Languages, she felt that observation would be the most helpful CPD strategy for her.

Teachers would like more opportunities to observe lessons in their own schools, but also observation in primary schools would also be a benefit for secondary teachers:

'The answers [to effective ICT CPD] are simple and within our reach…I could go to watch [ICT] and learn from it…it would be good to see *my* students in ICT and see how they learn with it, their behaviour…'

'Primary colleagues appear to be more secure…I do see the difference. We could learn a lot by training with primary colleagues…we are never given time. They have more creativity and are less scared…we need more networking between schools.'

Effective CPD is also about *being* observed, 'having somebody being there as I'm working with my learners, seeing what I'm trying to do'. This is so that a critical discussion can happen, particularly around how the pupils have been able to work with technologies *interactively*. A GTP trainee reported that 'lots of observation' has been critical for her learning about use of ICT for learning, even though she has a background as a TA in providing skills training. Pedagogy is a whole new area of learning, and 'watching the children with ICT, more than watching the teachers' was considered very important by her. This is qualitatively different from 'telling' about practice in after-school sessions – teachers need to be observing within each other's classrooms. She reports how teachers are 'surprised' by hearing her tell about what happened in other people's lessons, even where they know each other well.

Those in positions of mentoring trainees and NQTs had opportunities to observe them using ICT and found this could be a useful learning experience as these new teachers were often confident in using technologies in interesting ways, even though they were less experienced. This was by pure chance, though, where the new teachers were using technologies in the lessons selected for observation.

CPD within classrooms with pupils
Linking with practice by conducting CPD with actual classes of pupils was very highly rated but also very hard to achieve without external intervention. This is because teachers were so rarely able to leave their own classes to observe others and get involved in team-teaching. Outsiders (ASTs, Leading Teachers, ICT advisers, CLC staff etc.) had the flexibility to visit classrooms and carry out development sessions within real teaching situations. Such external 'experts' had been teachers themselves or, most frequently, were still teachers in their own schools, but released as ASTs. They visited classrooms to work with teachers, giving demonstration lessons, team-teaching or supporting teachers. This is the kind of experience which many teachers valued and would like to see happening among their own staff ('the answers are within our reach') but these opportunities were extremely limited.

Subject specialist CPD

For secondary teachers, this was important. It does not mean CPD which is focused on subject-specific software, but subject-specific *applications* of software. This does not mean there is no value in cross-curricular groups for CPD, indeed teachers could learn from other subjects and observing other subjects, but planning time with colleagues who understand the subject needs is very important.

Subject associations were mentioned as a source of support for secondary teachers. Membership of subject associations gave teachers access to ICT CPD they valued, including practical workshops at national and regional events and weekend residentials. This took place in teachers' own time on a voluntary basis (Saturday workshops and weekend conferences) or with support from schools in school time.

Ownership of equipment

Several teachers and senior leaders talked about the importance of 'owning' equipment, and this was a prevalent theme. One headteacher summed up the importance of an 'adult play policy' in how she supported teachers to develop in her school. Teachers were encouraged to 'just play' with a new technology for up to a whole term, to take a laptop home and explore new software in their own time. The school gives every teacher a laptop with free connectivity from home, as do several other schools. The school policy is based on the headteacher's belief that confidence comes with using technologies in one's personal life. The policy contradicted the LA policy which did not allow internet access for personal use. Other headteachers emphasised that TAs also had to have access to a school laptop from home.

Working with the wider school workforce

There were many examples where the wider school workforce made a significant contribution to ICT CPD by being included in CPD activities. In secondary schools, a non-teaching e-learning manager acted as a bridge between staff with technical expertise and teaching staff. His role was to support staff in the hands-on implementation of technologies in classrooms, and to be proactive in finding out about new applications and what is going on in other institutions. In primary schools in particular, TAs were cited as playing important roles in CPD. In one example, a TA undertook action research and kept a learning diary about how to teach with an IWB, based on her opportunities to engage with activities in teachers' classrooms. Then she was able to train the other TAs within a collaborative approach which encouraged the staff to become 'experts' in supporting each other, based on sharing the collective knowledge about using ICT which existed in the school. One headteacher bought in an LSA for extra hours to work alongside TAs and other LSAs who were not so ICT-competent, so that they could learn how to support the use of technologies for pupils' learning. It is important to recognise that some members of the workforce can have considerable needs – for example LSAs, because many of them are returning to work following time at home raising children, and have not had

opportunities to develop ICT skills. Other senior leaders said that TAs were paid for their time to ensure that they joined the after-school CPD activities. Judicious use of the skills of this range of staff from the wider workforce was a feature of headteachers in schools which had been identified as having successful ICT integration.

5.3 Issues that inhibit CPD being effective

Below are some issues frequently noted by interviewees as inhibiting effective ICT CPD. We have listed them broadly by degree of significance.

The need for intellectual challenge

There was frequent criticism of the lack of critical awareness of why and how technology should be used to support learning:

> 'We weren't questioning why we would use the technology, we *will* use these resources whether we'd like to or not. I'm quite competent with software so I have not really seen much of a difference [in practice].'

There was evidence of deeply reflective attitudes towards CPD, and frustration with prevalent arrangements which emphasise training over development:

> 'What would help teachers in top-down terms, is to try to develop a shared vision of learning and what technology actually is. Then, if you could do that, have teachers who say 'we think learning is this, technology is this, it plays a role here'...then you can start to talk about technology, only then can you have development, training is not development.'

Concrete examples of the shortcomings of 'training not development' were given by some teachers. They were concerned about lack of time for pedagogical development using IWBs: 'The fact you have got one computer and one whiteboard, which thirty people are using, their interaction with the technology directly, is limited'. The majority of teachers were aware that without pedagogical CPD, 'technologies with interactive potential are used in limited, transmissive ways'. The technology is proving difficult to exploit because it makes teachers *more* effective in using transmissive pedagogy, rather than in using interactive, learner-centred pedagogy. It is a powerful means of reinforcing pre-existing pedagogical tendencies. In addition, there is frequently an over-concentration on resource production at the expense of thinking about how resources will be used and revising the desired learning outcomes. This was reported as occupying a lot of time. The focus on resources, preparing efficiently centralised programmes and investment in electronic storage can be a problem, because it can become an end in itself. This may well be made worse by the current reported CPD priority of 'populating' new learning platforms.

It also seems important to re-assess what is meant by 'hands-on' training. Although teachers reported that it is important to learn the ICT skills, there was not much demand for more skills training as such. There was strong criticism of 'just practising'. It was not enough to have sessions focused on practising – teachers reported feeling bored and wanted to connect practice with thinking about how it would affect their pupils' learning. This is what teachers and headteachers meant by 'hands on' – not just learning how to use the technology at a skills level.

Resisting rhetoric

It seems that the features of pedagogical change brought about by technologies are sometimes poorly presented to teachers by external experts in ICT. Trying to criticise and undermine face-to-face social environments for teaching as 'old-fashioned' is a negative foundation for CPD. Generalisations about '21st century skills' provoke scepticism in teachers who work every day with pupils as human beings, and who know the value of relationships, talk, listening to others and learning to work collaboratively in face-to-face contexts. This was reported by teachers who were confident in using technology. They argued that the essential educational values and commitment to fostering positive relationships in conventional classrooms should be respected. Teachers report that some of the 'pitch' which has been used in school briefings by external experts is patronising and ill-advised. There is a problem with 'selling' ICT to teachers, rather than focusing on what supports effective pedagogy. They argue that CPD should start by valuing what teachers do, and ask – how can it be done better?

> 'The BSF man, we were shown a video of this and on this video it said that the reason learning skills for the future is so important is that we are trying to teach in the twenty-first century using nineteenth-century teaching methods, in that we have students in classrooms, for an hour at a time, organised by age, blah blah blah. But I think, actually, there is quite a lot in that, I think the relationship, when it works, between a teacher and a class is actually quite a powerful one. And I think being in a peer group, especially in a peer group of different abilities, is very powerful.'

Teachers are critical of the hard-selling of futuristic visions for ICT which devalue the merits of bringing people together to share experiences directly in the face-to-face social context of the classroom. Some teachers expressed the importance of working with fellow teachers who share essential perspectives on day-to-day life working with young people as productively as possible.

The focus on learning was very strong with most teachers, and they showed resistance to rhetoric, over-selling, commercial self-interest, and anything else that took precedence over genuine concerns for pupil learning.

Using ICT CPD to address perceived deficit rather than encourage innovation

There was a lack of expectation within some schools that teachers would develop high skill levels in ICT. It was more important to bring everyone up to the same baseline, which for some teachers meant no, or very little, personal development. This was evident in headteachers excusing teachers from CPD because it was 'only' a certain package which would not stretch the teacher, or by prioritising 'compulsory' training on packages that were not particularly suitable for developing expertise in particular subject areas. In a range of ways, CPD was seen as not particularly relevant to developing the teacher as an individual, but rather to achieving mass adoption. Boredom, cynicism and lack of commitment to CPD activities can be detected in the accounts of teachers in these types of scenarios.

The difficulty of articulating 'needs'

According to commercial providers, headteachers are frequently not sure of what ICT CPD the staff needs, which can mean that they bring in external expertise as a 'solution' to a bigger problem about lack of direction in ICT CPD. There was a lack of reference among most teachers to any kind of ICT audit, and certainly not to a review of pedagogical use of technologies. There is often little real consideration about whether teachers need to be supported to move on to something new, or build greater capacity with what they already have. Senior leaders do not always know what they want to prioritise (they usually have competing, potentially conflicting priorities) or how to differentiate between distinct needs. ICT CPD providers usually send questionnaires to schools to assess needs, but this seems to be a somewhat superficial solution to a bigger problem. The issue is about competing priorities facing schools, and how ICT fits into these competing priorities. This links with the issue below.

Tensions between individual development and school priorities for CPD

Inward-looking school-based ICT CPD was experienced in a school in difficult circumstances. Here, the teacher experienced being required to progress at the same rate as others. All staff had to have the same training for the same packages. CPD, according to the teacher, was trying to achieve all teachers doing the same thing. The school is proud of that because of the degree of problems which have to be addressed, and an increase in examination results has led to the justification of the emphasis on a uniform use of ICT across the school and consistent experiences for pupils. He had adjusted to this as a successful strategy, though personal frustrations are clear:

> 'If they use ICT in exactly the same way, the children will learn in the same way…Rather than me progressing in my CPD and doing much better than everyone else, they would rather see us all progressing the same.'

His own expertise in making his own website tailored to the pupils' needs is not developed within the school because of the priority to use the same software in every lesson and work with commercial partners to trial their products. The in-school CPD is geared to learning how to use those products. He believes the website he designed himself is better suited to the needs of the younger pupils, but he must use only the school one, even though he believes it is better for the pupils. This suggests that there can be problems where a school ICT infrastructure policy takes a very narrow view of how the learning needs of the pupils can be addressed (a 'single-strategy solution'). ICT CPD in this type of context is geared towards addressing a concept of 'deficit' in some teachers and bringing them all to a uniform standard and common practice to pursue a singular approach to school improvement.

Lack of ring-fenced funding for ICT CPD

The lack of ring-fenced funding for ICT CPD was identified as a main obstacle to developing effective provision for teachers in schools where the headteacher did not prioritise technology integration, or where the senior leaders favoured purchasing equipment and software over effective professional development in how to use it, or prioritised spending on non-pedagogical uses of technology.

Headteachers reported that funding in itself was not currently an impediment to teachers' development with technologies. Most schools were well equipped and in fact, many headeachers had stories of beginning headships and discovering large amounts of equipment which was not being used. The problem is with the choices headteachers make about how they spend the funds available, and about underestimating the amount of time that must be invested in developing pedagogical expertise – which costs money. While technology is embedded in nearly every school for teachers' administrative purposes and for presentational approaches, it is far from exploited for its pedagogical potential. There is no requirement, however, that headteachers will spend it on ICT CPD.

Funding for ICT CPD was reported as a problem particularly affecting small schools, where funding of PPA time is very difficult. It was reported by one LA representative that in her authority, primary headteachers sometimes feel they need to spend CPD funds on appointing staff to support PPA time. There was no spare money for finding time for teachers to undertake development work, in or out of school. Heads from the Leading Leaders network comment that a first priority is inducting newly appointed teachers into ICT practices, because they frequently arrive from other schools without relevant experience and expertise in ICT. Most of the Leading Leaders said that money was not really an issue affecting CPD to a significant degree in their schools, but they did recognise that it is an important factor in schools which are starting from a low baseline. They had developed strategies based on collaborative use of after-school CPD time, and had chosen to prioritise ICT CPD where money was available, whereas other heads might not have done. They had also managed funds creatively, used teachers to train others having paid for them to attend

courses, and actively sought awards and additional funding (including from commercial sponsors) to support technology integration.

The difference between these schools and others is clear. There appear to be considerable differences in the ICT CPD experiences on offer in schools with Leading Leaders as headteachers, and those reported by teachers in other types of schools. Furthermore, while the study has not particularly focused on schools with a high turnover of staff and high numbers of overseas trained teachers, it is reasonable to suggest that in these schools the problem of embedding pedagogy with ICT is more acute. Among teachers in some of the most socio-economically disadvantaged London boroughs, borough-wide approaches, either through the LA or CLC, were seen as essential to the ongoing challenge of developing ICT CPD. These programmes were free to schools and enabled teachers to access CPD and compensate for poor provision in some schools. It is clear that the picture is extremely varied and complicated, and there is no overall correlation between funding and quality of ICT CPD. There were many accounts of money being wasted on unused equipment and purchasing of ineffective external CPD provision. External providers can be bought in because it is seen as a cheaper solution than paying for staff to attend external CPD, but it is not clear that this is an effective approach to bringing about change in practice.

Corporate providers tended to argue that the problem was not the lack of funding but the lack of time – two issues that are clearly not unrelated, but one issue is that ICT CPD tends to come bundled with products. The priority therefore is always on teaching teachers about basic functionality. This leaves less time and money for more sophisticated forms of ICT CPD, not least because products are always changing.

Providers noted that when funding for ICT is not ring-fenced, schools can often switch their spending to other priorities. However, where funding is ring-fenced, much of the money can be dedicated to the purchasing of products rather than CPD. There might be an argument therefore for trying to separate CPD from the purchase of products, although this would require a significant change in many providers' business models of bundling the two together. One provider who charges for CPD separately has a department dedicated to CPD (unlike the other corporate providers interviewed) and a model for supporting the gradual embedding of their product in teaching and learning over several years. They have an incentive for doing this, because schools renew their subscription to the service every year (they don't at the moment sell products, but a video on demand service). For this company, however, there is still a problem of the lack of time for CPD. Other content providers noted that the emphasis on learning platforms was squeezing out software and content providers, and potentially therefore, more innovative pedagogically oriented products (rather than products focused on the management of schools). Providers of software and content seem to be struggling (one company, for instance has just purchased a learning platform so that it can be bundled with its video on demand service). There

are major market forces at work which appear to be shaping the future ICT CPD offer from providers. At the moment it is hard to tell the long-term impact of this on practice, but it is an area that needs close monitoring.

Lack of induction for new teachers

Lack of induction is a problem where an experienced teacher finds they do not feel able to continue using technologies on transfer to a new school because there is no induction into the school ICT infrastructure, there is nothing about ICT in the staff handbook and they have missed 'whole school' CPD on things like IWBs. Until fully established in the school, even an experienced teacher felt "I didn't feel I could handle it if things went wrong". This was in an inner-city context, and the challenges for teachers of developing ICT practice in challenging schools should not be underestimated. Concerns about equipment failure and lack of knowledge of technical support can discourage even experienced teachers when they begin a new post in a school where it takes time to become established and classroom control is hard to achieve. New staff can be 'forgotten' because they are 'experienced'. Some headteachers spoke of the necessity of an ICT induction programme for all new staff, especially in schools where technology is highly integrated, because new staff are rarely able to just adapt to the new infrastructure, no matter how experienced they are as teachers. None of the teachers interviewed had experienced high-quality ICT induction on moving to a new school.

Access to technology

Access to technology is a significant recurring theme throughout the interviews with teachers. Problems of access were reported to have a seriously detrimental effect on teachers being able to take ownership of how to work with technologies and develop confidence by embedding them routinely in everyday practice. Despite reports of schools being well equipped centrally (that is, in computer suites and dedicated ICT areas), the persistent pattern is of teachers lacking easy access to flexible ICT in their own teaching classrooms, and finding it difficult to get technical support 'on demand' other than in computer suites. The problem has several elements:

- Lack of access to specialised suites, where there is strong competition for advanced booking
- Lack of access to equipment outside of centrally stored kit, so that teachers cannot experiment at home (by for example having more laptops loaded with appropriate software, and camera equipment to take home and learn to use well)
- Lack of time within the school day to practise in dedicated computer suites
- Lack of software or equipment which supports specialised subject needs.

Being in an ICT specialist school did not necessarily mean that there was greater awareness of how to provide effective ongoing access for teachers to develop practice:

> 'In my last school [an ICT specialist college] the computer rooms were booked for Business Studies and ICT and I could never get in. I didn't take a single class in to the computer room – this was an ICT specialist school. I don't know what they did with that money.'

Concern was also expressed about the significant disparities in funding introduced by BSF, with rural schools likely to fall significantly behind urban schools in terms of access to technology.

Lack of awareness of subject needs

Subject needs of secondary teachers were not always recognised by those in charge of ICT CPD at school level. Decisions made by headteachers or, more frequently, ICT co-ordinators, meant that professional development opportunities were wasted because there was no chance to practise owing to lack of access to technology. Having been on a Local Authority IWB course described as 'inspirational', one RE teacher explains "Of course …my department was the last to get [IWBs]…even though we were the most enthusiastic about using them…".

Disillusionment sets in where there are limited opportunities to develop pedagogy outside 'technical' focused subjects. An English department had their request for a laptop trolley rejected:

> 'We were told no – they would only be used as a typewriter. The Head of ICT decided…did not understand how technologies could be used in English and decided it was not relevant…'

Where this occurred, it was a serious obstacle to teachers developing a positive attitude towards their ICT CPD and to the school provision of resources for teachers to develop ICT across the curriculum.

6. Reflections

6.1 Differences between primary and secondary school contexts for effective ICT CPD

There are different experiences of ICT CPD for primary and secondary school teachers among those we interviewed. The smaller size of primary schools, more flexible nature of the curriculum and cross-curricular teaching responsibilities of staff mean that primary headteachers appear to be more able to foster key features supporting ICT CPD. Among the headteachers we interviewed, these features include: learning communities; genuinely inclusive ICT CPD practices; close knowledge of pedagogical practices across the entire workforce; close working relationships; an atmosphere of risk-taking in a close-knit community; and engagement of TAs and LSAs as 'experts' and leaders of CPD in some instances.

Whilst we might say there is a lot here to be learned for secondary colleagues, that is quite disingenuous in certain terms. There are limitations in making recommendations based on schools of particular size and common teaching curriculum across staff, where collegiality is easier to foster and reaching whole staff and engaging in a shared vision is relatively easier to achieve. The contextual differences are very important, and should not be downplayed. Undoubtedly however, individual approaches to school leadership also play a crucial role in effective ICT CPD. This has been explored in detail in Section 5.1 on 'Leadership'.

6.2 Whole school v individual and subject-specific CPD

A related but slightly different issue is whether effective CPD is aimed at the whole school or is targeted at specific subjects. Corporate providers are divided on which is more effective, depending on whether they are selling 'whole school' products, like learning platforms, or subject-specific CPD such as whiteboards in the teaching of English or media literacy for English and media teachers. Dedicated CPD time in schools, like Inset days, tends to be given over to whole-school training, which leads to an emphasis on products which enhance management but not necessarily pedagogy (although the two are clearly not unrelated). This has squeezed out time for addressing subject-specific CPD. Providers comment on the difficulty of 'buying out' time for departments or for individual teachers, owing to the cost of supply cover. Another issue is that whole-school CPD leaves teachers with less choice about what kind of CPD they need and are interested in, which then leads to a model of CPD being 'imposed' on teachers. This is also linked to the issue of 'baseline entitlements' (see below) because if the emphasis is on 'whole school CPD', CPD activities need to be suited to the teachers with the lowest level of ICT experience (although all

providers mention endeavouring to carry out differentiation). This makes ICT CPD often about encouraging teachers to use ICT, and therefore about teaching them basic functionality, rather than about using ICT to enable innovative or experimental pedagogy, or to focus on excellence (as opposed to basic skills). Nearly all providers (barring ASTs and professional associations) had a linear model of CPD in which teachers are first introduced to the basic functionality of ICT, and then, later, might be introduced to more advanced ICT use (such as embedding it in their teaching, re-developing their schemes of work around it and so on). This model necessarily implies that ICT CPD which focuses on embedding technologies in pedagogy is left till last or is reserved for the few enthusiastic teachers. There was not much evidence of teachers moving very rapidly along this linear model.

6.3 Fragmentation

Fragmentation of ICT CPD provision is common across both primary and secondary sectors. In effect, the diversity of schools, autonomy of heads, lack of ring-fenced funding for ICT CPD and a wide variety of relationships with LAs makes the CPD environment a 'free for all' with significant differences between winners and losers. There were many examples of outstanding ICT CPD practice, particularly reported by headteachers identified as 'Leading Leaders' by Becta. Within a professional network like the Leading Leaders, there were opportunities for high-level professional development for senior leaders, which was seen as being very important in pushing the boundaries of what it is possible to achieve with ICT. However, the CPD approaches adopted by these heads (for example, planned collaborative group learning among teachers, dedicated CPD time for shared lesson planning, inclusive approaches to the ICT CPD of other workforce members and identifying CPD expertise among non-ICT specialists) do not appear to be representative of those experienced by teachers more generally.

More widely, teachers reported a highly insular experience of CPD within their schools, and their CPD did not seem to be affected by the successful practices developed by a minority of other schools. Inconsistencies between schools are considerable. Few teachers reported being supported by other schools where staff have developed high levels of practice, as such schools do not appear to engage deeply with the learning of teachers in other schools (though there are notable exceptions). Schools which are doing well do not necessarily associate with ideas which are different from the ones they have worked with over time and there can be a tendency to be inward-looking, or reluctant to get involved in other schools' problems. Networking and learning across schools does happen (via the Leaders Leaders network, for example) but this is not always to the benefit of schools with poor practice in ICT CPD.

There is not a universal sense of what ICT CPD should be trying to achieve. The main CPD priorities for the forthcoming year were identified by headteachers as:

- Getting everyone *using* existing technology, such as IWBs which have been installed for some time but are never used or used in very restricted ways
- Getting unused hardware 'out of cupboards'
- Getting everyone to populate new learning platforms
- Getting everyone to learn how to support parental access to pupil progress tracking.

By prioritising 'using' the technology, ICT-leading heads frequently mean using it for pedagogical benefits and consolidating practice development, but it was acknowledged that sometimes 'using' might just mean having IWBs switched on. Having to address this basic need is still a priority for headteachers when first taking over schools with limited ICT practice among staff. In many cases outside the leading ICT schools, this remains the priority and the CPD strategy rarely develops into something more effective.

A related issue noted by providers is that school priorities, usually dictated by inspection reports, determine what forms of CPD are on offer. ICT CPD is rarely given priority, as ICT is not included in Ofsted's inspection schedules. This might not be the case in schools where ICT is seen as a way of improving teaching and learning, but this is very much a decision made at individual school level.

The issue of fragmentation also relates to how the ICT market has emerged, with many providers selling, or focusing on, specific products (whiteboards, video content, etc.). Schools are therefore often dealing with many providers of ICT but there is no integration of CPD across the many different products they might have purchased. This is not the case with providers selling multiple products, although even with these providers, the people doing the training may have a focus on specific products (such as the use of learning platforms). An alternative model is offered by providers who are not associated with a specific product, such as professional associations or ASTs, and also companies with broad product bases for providing services and re-selling. A problem they face, however, is that the range of technologies in school varies hugely – one provider, for instance, developed a training course for the use of whiteboards in English classrooms, but teachers had access to a wide range of whiteboards within one school, let alone one LA. Companies which act as technology market development and services organisations seem to have been quite successful in organising integrated ICT CPD by focusing on helping schools meet the needs of external agencies, for example helping schools complete the self-evaluation forms (as required by Ofsted prior to school inspections).

Within this broad picture of a fragmented free market, there is increased emphasis on 'encoding' teaching, for instance in fixed schemes of work and resources to be

used, precisely to try and address the fragmented picture of teaching practice. On the whole, there is a push towards greater conformity and prescription of how teaching and learning happens. This can certainly lead to improvements in some cases, but it can also ossify practice, and make it very difficult to change. This can militate against the introduction of new ways of teaching and learning, of which the use of technology and associated ICT CPD is one aspect.

6.4 Lack of baseline entitlement to ICT CPD for all teachers

There is a lack of common entitlement for teachers' professional development in ICT. In generic areas of teacher development there are standards (Training and Development Agency for Schools, 2007) to guide what counts as professional practice; the framework of professional development has re-introduced reflective practice and the notion of teachers as leaders of their own development within collegial arrangements. But none of this is focused on ICT. Optimistically, it is assumed that there is no longer a need to specify a statutory development profile for ICT. The reality is that many teachers do not have the requisite skills and have only limited access to learning about pedagogy using ICT within their schools. Effective pedagogy using ICT is clearly *not* embedded in all schools. Technology infrastructure probably is, although problems of personal access to technology persist for teachers. In terms of the response needed from CPD, there is considerable scope for teachers to fall through the gap between the projected ideal of schools with lots of technology in evidence, and the reality of the lack of its effective use for learning in their everyday practice.

A number of providers noted the importance of having a baseline entitlement access to appropriate ICT CPD, but they also noted that unless this can be supported by ring-fenced funding and enforced, it will not be effective for the reasons stated above (under Fragmentation). There is also the danger, with an entitlement model, of reinforcing the problem of focusing on teachers with minimal ICT skills, rather than on using ICT to do innovative work. ICT CPD then becomes associated with a deficit model of CPD, again with the prioritisation of skills in basic functionality rather than embedding it in teaching and learning.

The evidence from the study suggests that teachers are committed to ICT CPD, but have strong views about the forms it should take and are critical of superficial, one-off and 'box-ticking' approaches which emphasise the development of functional skills and relegate pedagogical development to teachers' 'spare' time. Senior leaders are central in establishing effective models for their staff, but there appear to be considerable inconsistencies between schools in the leadership of CPD. Policy recommendations need to take account of the reports of teachers that they learn most when given opportunities to work in 'real' classrooms with fellow professionals, both external 'experts' and their own teacher colleagues. They need access to other teachers who use ICT successfully, to observe, teach together and plan. There are

clearly resource implications here, but this is as much about the utilisation of existing resources, both financial and in terms of personnel. A considerable shift appears to be needed, and professional development for senior leaders in establishing collaborative approaches to ICT CPD (and CPD generally) is essential in order to bring about the kinds of changes that are needed.

7. Conclusions

There is a serious gap between the surface adoption of technologies in schools and teachers' utilisation of them to enhance learning. This is partly because of a focus on the desire to have high-visibility technology which is not necessarily changing approaches to learning, for example by using IWBs as teacher-centred resources for the transmission of information – however creatively designed by the teacher. Schools have to publicise themselves in competitive contexts, to be seen by parents as being 'cutting edge' in terms of the amount of technology available. For example, there was much talk among teachers of being expected to 'populate' learning platforms with existing learning resources, but very little talk about using the introduction of a platform to review pedagogy and revise learning approaches and resources. The drive to populate the learning platform with material appeared to take precedence over taking longer to consider the objectives behind the use of the platform, and think about how the learning experience for pupils could be enriched. The most pressing use of CPD time for many teachers, understandably, was to have it working. But there was little indication of how this priority would then develop into further discussions about the quality of learning and teaching that could be supported by using the platform.

Superficial adoption of high-visibility technologies is an understandable feature of schools which are under pressure to impress in competitive contexts and encouraged to showcase products for the outside world. Deeper, slower work that changes teachers' understanding of how to support pupils' learning is less visible. Priorities for further development suggest that there is an urgency to adopt sophisticated technologies as widely as possible, but teachers could not explain clearly how they expected their CPD would help them to take advantage of these resources. There does not appear to be anything consistently in place across schools to support that very complex process. This is widely recognised by some providers who have a major commitment to enhance the quality of pupils' learning, in particular LAs and CLCs, and is demonstrated in their provision of ICT courses with a strong pedagogical, practically relevant focus where possible. Frequently, however, they are not valued by headteachers, some of whom appear to have a principled objection to working with them. There is a need for co-ordinated and consistent guidelines at national level concerning ICT CPD which set out baseline expectations in this area, based on an entitlement view of what pupils should be able to experience with technologies, and therefore what teachers need to be able to do. The free market context has worked to the advantage of some schools, but for too many teachers the lack of direction and co-ordinated and informed ICT CPD means that they, and thus their pupils, miss out on the true potential of technologies, despite being in schools which are well equipped.

There is much to be gained from sharing models where teachers and senior leaders report effective ICT CPD, and certainly the components of effective CPD models can be identified as outlined above. The highly localised effects of these must be acknowledged, however, and they have to be seen within crucial factors of school leadership and use of funds to buy time for teachers and appropriate various kinds of external input. This is a highly complex area to address, since there is no one type of external provision which meets all needs. The features of CPD design which stand out as being effective according to those who experience it are now identifiable, however, and the school workforce can benefit from becoming familiar with these features.

Questions need to be asked about what can be done to compensate for the extremely fragmented picture of ICT CPD, so that more consistency in accessing professional development can be achieved by the workforce across all schools and across different phases of education. There is a case for 'entitlement' to ICT CPD for teachers, given the considerable sums being invested in technology without accompanying mechanisms to ensure its effective deployment. Ring-fenced funding for ICT CPD may be a way forward, but there is a danger of school leaders using funds in different ways in a free market where not all provision is based on the principles which emerge as effective in supporting professional development. What kind of ring-fencing is effective and for what kinds of providers? It is important that access to diversity of practice is guaranteed, in a context where inward-looking schools are able to rely entirely on Managed Service Provider approaches which can restrict certain types of activity and access to ideas which are supporting practice in other schools. Questions also arise about how ICT CPD can be more widely differentiated so that there is also room for CPD which focuses on innovation and excellence, and not primarily on functionality.

A further market-driven issue is how CPD is organised around the selling of products. There is an argument that ICT CPD should become a commercially valid option in its own right. It seems important to investigate whether this would increase the quality and range of ICT CPD on offer and how a market for ICT CPD could be created if this was considered a desirable thing. More broadly, how can public funding be organised to structure the market for ICT products in ways that most effectively lead to enhancements in teaching and learning: what kind of providers (providers of content / learning platforms / managed services / CPD) should public funding be helping, and not helping? Commerce has always had an effect in this area, and will continue to do so, and these are questions which need to be asked as the new landscape for ICT CPD becomes increasingly influenced by these commercial drivers in schools.

8. Recommendations

1   There is a need for a wider study into what constitutes effective ICT CPD. The findings of this small-scale study suggest there are substantial, difficult and sensitive issues to be addressed. Therefore a wider, national study of CPD in this area would provide further investigation of the issues raised here, and form a substantial evidence base to inform recommendations for shifts in policy focus, funding and monitoring of effective CPD.

2   National guidance and training for school leaders is needed regarding appropriate goals for ICT CPD, together with recommendations about the design of school-based CPD. Examples of guidance would include recommendations about supporting peer learning, the effective deployment of staff in key roles, facilitation of opportunities for small group work and the use of time for series of activities including planning, observation and feedback between teachers. The former Strategic Leadership of ICT (SLICT) programme was well received by the headteachers we spoke with, who felt it had been a successful initiative and that there is now an absence of sources of development for senior staff.

3   Guidelines should be provided for schools to ensure that ICT CPD be differentiated to meet the needs of individual teachers, as well as addressing school and department needs.

4   There should be minimum entitlement to ICT CPD based on meeting individual needs to develop particular strengths and interests. The needs of teachers who are confident with technology should be equally important as the focus on addressing deficit. Such an entitlement should seek to challenge the current emphasis within much school-based CPD on addressing deficit.

5   Guidance should emphasise the benefits of outward-looking CPD which makes judicious use of external expertise within well-planned programmes and activities over time. It should emphasise the importance of a co-ordinated approach where external providers are involved, so that the school players work together with providers.

6   An in-depth review should be commissioned into the ways in which a school's relationship with commercial providers affects the CPD offer within the school and the 'vision' of ICT integration which it supports. It

NOT PROTECTIVELY MARKED

is important to understand how CPD can focus on the integration of various ICT resources rather than on specific products.

7   Funding should be sought to provide *all* teachers, TAs and LSAs with their own laptop with relevant software as an entitlement, not based on the policy or beliefs of individual school heads and school financial contexts. This should be a national policy. It is a very strong theme emerging from the data. Ease of access to basic equipment is now an essential part of professional life and appears to make a significant difference to teachers' capacity and enthusiasm for learning.

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