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Are teachers technophobes? Investigating professional competency in the use of ICT to support teaching and learning

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Abstract

Recent research would appear to indicate that a diverse landscape exists in primary and secondary schools, both in terms of teachers' ICT skills and the implementation of pedagogy and practice. Despite this diversity, Britain is still contended to be one of the world leaders in the use of technology in education with at least £10 billion having been invested since 1999 (Becta, 2008a) and, although government funding is set to continue, the percentage of schools considered to be e-mature remains relatively low. Following a review of the literature, this small-scale study, which was commissioned by The British Educational and Technology Association [Becta], seeks to answer the question: What is the extent and nature of the ICT skills and competencies of the teaching workforce?

Keywords: ICT; primary education; secondary education; teachers.

1. Introduction

The latest *Harnessing Technology Schools Survey* (Rudd *et al.* 2009) reports that the vast majority of teachers are both enthusiastic and confident in using ICT to support teaching and learning and that this is a trend which has continued in recent years (see: Kitchen *et al.,* 2007; Smith *et al.,* 2008a and 2008b). Given that high levels of both confidence and usage have been documented, it may be useful to consider these in the context of the type of ICT application and the way in which they are used. Interactive whiteboards [IWBs] would appear to be the dominant technology in schools which are 'used primarily for presentational purposes' with between 33 and 50 per cent of teachers using them in all or most of their lessons (Smith *et al.,* 2008a, p. 40). The internet would also appear to be increasingly used confidently by teachers to support reaching and learning, and is an area in which teachers felt they needed the least Continuing Professional Development [CPD] (Smith *et al.,* 2008a). However, despite the majority of teachers having received some form of training in the use of ICT in recent years, and given the levels of confidence noted above, ICT is still a major professional development need. 'Using ICT in teaching' has remained

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the most frequently selected topic for Continuing Professional Development [CPD] in the *General Teaching Council Survey: Report on Trend Data* (Ashby, 2007) and is among the top three perceived needs for all but the most recently qualified teachers.

As noted above, the most pervasive use of technology in recent years is the IWB, where in the majority of cases, the IWB is used for whole-class teaching during the introduction and plenary sections of the lesson. In Key Stage 2 (pupils aged 7 – 11), more skilled teachers use it integrally throughout the lesson whereas in Key Stage 1 (pupils aged 5 – 7), the IWB is used with individuals or small groups, sometimes under the supervision of a Learning Support Assistant [LSA]. In the primary sector, IWBs are most commonly employed to support literacy and numeracy with a third of lessons employing the use of this technology (Somekh *et al.,* 2007). Although some research studies (see, for example: Barton and Haydn, 2006; Thomas and Stratton, 2006) have explored the use of ICT in the secondary sector, a coherent, national landscape of how ICT is used in different subjects at this level would appear to be lacking. However, an earlier finding, (Becta, 2006) was that IWBs were used most frequently in secondary schools by mathematics teachers with 60 per cent reporting that they used them in half or more lessons.

Despite this engagement with the use of some ICTs, newer technologies are reportedly under employed. For example, the application of Web 2.0 technologies such as instant messaging, wikis, blogs, and online discussion groups being 'extremely uncommon' with 'a sizeable minority' of primary teachers unfamiliar with these types of software and a quarter of secondary teachers never having heard of wikis (Becta, 2008a, p.41). When considering the reported high levels of teachers' confidence and usage of ICT, this paper would suggest that this may be limited to certain types and levels of usage, for example, a preferred tendency towards display technologies for whole class teaching (Becta, 2008b). Research would also indicate that some teachers feel their status is threatened because they find themselves in a situation where the pupil is more skilled and knowledgeable than they are (Condie *et al.*, 2005 and 2007; Ofsted, 2009). This current gap in teachers' knowledge, understanding and awareness of Web 2.0 technologies remains a cause for concern, and one which is highlighted in the *Harnessing Technology: Schools Survey*. Smith *et al.* (2008a) cite a number of studies (Bryant, 2007; Luckin *et al.,* 2008; Walker *et al.,* 2008) which would all seem to point to a lack of effectiveness in using Web 2.0 technologies to support learning in the classroom with a lack of guidance on using these technologies being noted as a particular barrier despite the beneficial role that such technologies can play in supporting learning. The findings of Conole *et al*. (2008) would suggest that most pupils are immersed in a technology-rich environment and that they 'select and appropriate technologies to their own personal learning needs' and that these findings 'have profound implications for the way in which educational institutions design and support learning activities' (p. 511).

Given this emphasis on the ICT experiences of the younger generation, there would appear to be a far greater body of research into the skills, competencies, attitudes and experiences of Newly Qualified Teachers [NQTs] or those in Initial Teacher Training [ITT] (for example, Barton and Haydn, 2006; Hammond, 2008a & b) than longer-serving members of the profession. As Hennessy and Deaney (2004) point out, 'little is known about the influence of teachers who have already established ways of working with ICT' (p. 2). Likewise, there also exists the perception that those new to the profession are more experienced with ICT and are more committed to its use than longer-serving teachers (Hammond *et al*., 2008a). Indeed, as Condie *et al.* (2007) have observed, the majority of teachers in the classroom today trained before ICT became a significant development in education. As a result, ITT programmes now provide trainees with the skills and competencies needed to use ICT within their practice. However, it is wrong to assume that all new entrants to the profession will have the same levels of confidence and there is a risk that teachers will continue to use 'safe' technologies with which they are familiar with, rather than exploring creative alternatives.

2. Method

A review of the current literature reveals a diverse landscape in which it is clear that there is still disparity in terms of the move towards an e-mature teaching workforce. Due to the ever changing nature of ICTs, current literature, particularly journal articles, have become increasingly out-dated. And it is for this reason that it was considered pertinent to investigate the situation through a series of one-to-one case studies with key stakeholders in the workforce. Using the findings from the literature as a barometer, a questionnaire was devised to explore the following themes:

1. Approaches to assessing ICT skills;
2. The nature of ICT skills sets and specific ICT skills;
3. Contrasts in ICT skills between different groups of teachers;
4. Barriers and enablers.

Although the sample size of this report (six respondents) may be considered very small, those people who were interviewed were judged to be a true representative sample of the workforce and included Local Authority personnel, head teachers and ICT coordinators working in both the primary and secondary sectors. The questions were delivered to the respondents in advance of the interview so that any misunderstandings could be dealt with before the interviews took place. In line with Star Chamber protocol (a government gateway process to assess the collection of data which places minimum burden on front line staff), the names of those members of the workforce being approached were presented to Becta beforehand. The interviews took place individually and were recorded digitally and the transcripts were then word processed. All participants signed an ethical clearance form giving their consent to be interviewed with the right to remain anonymous as well as having the option of withdrawing their contribution at any stage of the research. For the purposes of this report, the participants will be referred to in the following way: SAH – Secondary, Assistant Head Teacher; PIH – Primary, Infant Head Teacher; SPLA – Secondary and Primary Local Authority School Improvement Advisor; PLA – Primary Local Authority Advisor; PH – Primary Head Teacher; PC – Primary ICT Coordinator.

3. Findings

3.1. Approaches to ICT skills

Respondents were invited to share the ways in which ICT training was delivered, and how these skills were built upon. Primary respondents reported a number of approaches including planned in-service education training [INSET] based on the school's improvement plan as well as 'last minute INSET' which came from what was being seen in class on a 'day to day basis'. Informal *ad hoc* training was also employed, for example where skills once learned, but forgotten, were revisited through informal support. Off-site training was also mentioned with staff returning to school and cascading skills to the other teachers including Teaching Assistants [TAs]. SAH indicated that although the vast majority of training in her secondary school was delivered inter-departmentally, training to meet individual needs was also available and skills were built upon by moving to the next level of competency.

In line with the perceived demand for CPD reported in the research, SPLA reported that in his local authority 'there's loads of training going on' at both primary and secondary level much of which is school based and at 'different levels' to meet the different needs of teachers and technicians. When asked how the training was built upon, SPLA talked about having 'user group meetings' which are intended to continually build on staff skills. The picture presented by PLA was similar to one given by SPLA, where she noted that 'We really try to tailor it much more to schools' needs.'

3.1.1. The nature of ICT skills sets and specific ICT skills

Overall, there was generally a strong level of agreement in response to the question: *To what extent are there still teachers who lack basic skills, such as file management, WP skills? And how are their needs met or supported?* Two of the respondents were instantly able to cite teachers who did not possess sufficient ICT skills to send an email. SAH responded to the question by noting that at least 30 per cent of secondary staff in her school lacked basic skills such as understanding file extensions, how to organise files or realising 'the need to name things in a meaningful manner.' Although PC reported a similar situation to SAH, this was more in terms of TA skills, rather than teaching staff. On the flip-side, PC and PIH noted that there were no teachers in their schools who lacked the basic skills. None of the respondents, apart from SAH (and SPLA in the previous question) indicated how a lack of basic skills would be supported.

At the other end of the spectrum, respondents were asked to comment on teachers who possessed advanced skills and how this expertise was built on. At Local Authority level, both primary and secondary respondents discussed the fact that it was not so much technical skills but rather a lack of good pedagogical knowledge about how to use ICT

to support learning. In both sectors, leading ICT teachers were seconded from schools so that good practice could be shared. Likewise, SPLA also said that staff were seconded form schools and that good practice was disseminated.

Recent research has shown (Becta, 2008b; Cox and Marshall, 2007; Somekh *et al.*, 2007) that few teachers' would appear to employ a wide range of ICT applications in their teaching, and that usage is confined to only a few types. Respondents were asked how true they felt this was in their setting, and their responses would appear to support the research. It was reported generally that staff were: reluctant to embrace the introduction of new ICTs, for example a pupil voting system (SAH); used only a small number of programs from a wide range available (PC); failed to use IT resources (digital cameras) which were kept in cupboards (PH). In line with the findings of Somekh *et al.* (2007) PH noted that although staff were making reasonable use of IWBs only 'the odd teacher . . . uses it really well.' At Local Authority level, SPLA agreed that teachers' uses of ICT were generally limited (echoing a finding of Becta, 2008b), but felt that this was changing and wasn't necessarily true in the Early Years Foundation Stage [EYFS]. PLA agreed that most teachers stuck to the 'comfort areas' like word processing and internet research, but felt this was because many schools had abandoned, but not replaced, the outdated Qualifications and Curriculum Authority [QCA] scheme of work for ICT.

Respondents were then invited to comment on what they felt their strengths were in terms of classroom practice in their setting. This question gathered a wide range of responses, and revealed, overall, some good examples of how schools and Local Authorities are moving towards e-maturity. For example, Ofsted (2009) identified assessment in ICT as being a particularly weak area in both the primary and secondary sectors, although PC revealed this to be one of their schools' strengths. PIH and SAH would also appear to be addressing gaps in the use of Web 2.0 technologies which has been identified as an area for development by recent research (Smith *et al.,* 2008a). For example, PIH mentioned that teachers in Year 2 were starting blogging with the children. SAH reported that training in the use of wikis had taken place in some departments and training staff in podcasting was imminent.

3.1.1.1. Contrasts in ICT skills between different groups of teachers

In order to try and understand whether there were any differences in practice between different groups of teachers, the respondents were asked whether they felt that newly qualified teachers were better skilled than longer serving teachers. All of the respondents indicated that they thought this was the case (a finding reported in the literature, see: Hammond *et al*., 2008a; Sime and Priestley, 2005) although at a Local Authority level PLA noted that some teachers who were in their forties or fifties were leading ICT teachers. Secondary NQTs were generally felt by SAH to be better skilled 'in terms of less fear and more expectation.' Reasons given by respondents supporting the notion that NQTS were better skilled included a high level of input during their training as well as the fact that many younger NQTs had grown up using computers at home and in school, whereas older staff had to 'get to grips with it.' PIH made a similar response but added that 'established staff have made a really, really huge effort to embrace technology.'

The respondents were then asked whether they felt age was a factor in terms of levels of ICT competence. The reactions were mixed. PIH said 'yes' but felt that it wasn't just down to age but that 'the younger they are, the more open minded they are to embracing technologies.' PLA commented on the use of Web 2.0 technologies and noted that this might present more of a challenge for older teachers in the sense that they are having to adapt to new and different ways of delivering the curriculum – a factor borne out by Smith *et al.* (2008a and 2008b) who reported a lack of teachers' awareness about the existence of technologies such as wikis and social networking tools. PH, SPLA, PC and SAH all gave similar responses and commented to the effect that age can be factor, but not necessarily, and all gave examples of mature colleagues they knew who were extremely competent with ICT.

3.1.1.2. Barriers and Enablers

The final question posed to the respondents was: *'What do you think are the main barriers and enablers to ICT skills development and practice?'* Research has consistently reported time as a barrier, both in terms of finding time for staff CPD and finding time to either explore software and hardware independently or revisit and consolidate skills (see: Adam, 2007; Becta, 2008b; Smith *et al.,* 2008b; Somekh *et al.,* 2007; Thomas and Stratton, 2006). Time was identified as a barrier by half of the respondents. PH said that finding the time to develop staff skills was 'the main barrier'. PC felt that time was 'something we don't have very much of' and SAH cited time, but in relation to constraints in providing CPD and having time for self-development. SPLA felt that the main barrier in his Local

Authority were 'people' and this was defined in terms of whether they willing or not to embrace change and 'move on.' PLA on the other hand felt that a lack of pressure from Ofsted to focus on ICT provision was also a barrier insofar as this contributed to limiting the scope and range of ICT.

In terms of enablers, PH felt that sharing school-wide expectations with staff acted as an enabler, for example the notion that reports and timetables should be shared electronically. PIH didn't offer any opinion on the barriers he confronted. Conversely, he was able to cite money as an enabler because he had inherited a 'huge under-spend' which allowed him the opportunity to 'do things' which he wouldn't otherwise have been able to do, such as freeing up staff to be able to undertake ICT training.

4. Further Discussion

Respondents were also questioned concerning the exchange of knowledge between pupils and teachers and were asked whether they would ever consider using pupils as a resource in terms of empowering pupils to train teachers. Although this question was not part of the scripted interview, some responses are touched upon here. SAH felt that pupils would fully embrace this role and that the only resistance would come from teachers who felt threatened due to their own lack of confidence in ICT. SPLA and PLA both indicated that this process of engagement was quite natural, particularly in a situation where a teacher was experiencing difficulty. Even in Key Stage 1, PC said that allowing pupils to share their knowledge had helped a trainee teacher to troubleshoot a problem when using the interactive whiteboard.

5. Conclusion and Recommendations

Barriers to the use of ICT involve a lack of teacher awareness about what technologies are available and how they can be used to support the delivery of the curriculum. If teachers are not able to implement and use the resources they already have available to them, then time and training would appear to be the main factors in preventing this happening. Time not just to locate and learn how to use these resources, but time to be shown, and practice, how they can be used in relevant ways to support subject teaching. In particular, evidence from the literature and case studies suggests that the successful aspects of CPD involve face to face training which is tailored to both teachers' individual needs, their setting and the technologies available to them.

If the United Kingdom is to maintain its status as one of the world leaders in the use of technology for learning and teaching, then the implementation of the next phase of the *Harnessing Technology strategy – 2008-14* will have an important role to play. Not just in terms of ensuring an e-confident system is in place, but also in ensuring that the areas and gaps in the skills of the workforce are addressed. CPD will continue to play an important role and, in particular, this will mean meeting the training needs of the workforce in order to expand their breadth and range of skills. With regard to new and emerging technologies, greater collaboration may be needed between pupils and teachers to facilitate the development of teaching and learning in this area. However, a fine balance will need to be maintained between the perceived awareness of the relevance of new and existing practice, sufficient resources and ease of access as well as the teachers being ready, prepared and willing to engage with new ways of working.

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