Cascading the use of Web 2.0 technology in secondary schools in the United Kingdom: identifying the barriers beyond pre-service training

Abstract

This paper reports on research that took place at Nottingham Trent University and Sheffield Hallam University, United Kingdom, over two years. The research focuses on the use of Web 2.0 technology, specifically web logs, with pre-service teachers, both during their university programme and the first year of teaching as full-time newly qualified teachers (NQTs). The purpose of this research was to add a developing body of knowledge by identifying whether technology used by pre-service teachers during their training course can be cascaded into their practice once qualified. Key findings identify a number of enablers and barriers to cascading technology in the classroom; these include curriculum time, pupil skills and support. The research concludes that early professional support and development should be on-going and assumptions about new teachers as champions of cascading innovative use of Web 2 technologies into their practice as NQTs may be over optimistic.

Keywords: Pre-Service Teacher Education; Secondary School Teachers; Teacher Education; Pedagogy; Web 2.0 Technologies; Weblogs; Blogs.

Introduction

The speed of change in technology within education worldwide means that it is essential for pre-service teachers to be familiar with the latest technology as a means for enhancing their own teaching and learning expertise and those of their pupils. Pre-service teachers in the United Kingdom (UK) are expected to understand how to utilise a range of technologies, including Web 2.0 technologies, both in terms of understanding the pedagogical rationale and in developing competency themselves in using these tools, as set out in the Training and Development Agency standards for teacher education.

One of the challenges arising from Web 2.0 technologies is to develop new pedagogies to support the use of these tools in the classroom. Web 2.0 technologies, encompassing for example wikis, blogs, podcasts, and social networking technologies, provide new challenges in terms of pedagogy (Webb and Cox, 2004; Judson, 2006; Franklin, 2007; Minocha, 2009). Developments in Web 2.0 technology have seen an increased usage in secondary education, which is reflected in pre-service teacher training courses across Europe. Richardson (2010, p. x) recognises the challenge of teachers to experience these technologies 'to fully understand the pedagogies of using these tools with our students'.

The argument for developing new pedagogies for new technologies is further supported by Pelgrum and Doornekamp (2009). Their report, commissioned by the European Commission (EC), indicates that of the twenty-eight European countries that took part in the report, ninety per cent regard pedagogical support for teachers as being of a 'high to medium need'. The figure was similar for pedagogical ICT competencies of pre-service teachers, with a 'high need' identified (2009, p.54). One country's representative in the report is

quoted as stating 'We want all teachers to display a full repertoire of pedagogical skills with technology' (2009, p.41). Thus teacher educators are faced with the dichotomy between the use of new technologies creating a new learning environment for pre-service teachers and using these as a pedagogical resource for promoting learning outcomes at post-graduate level (second level). However, the introduction of using technologies in the classroom introduces increased complexity in 'pedagogical reasoning' (Webb and Cox, 2004, p. 235).

The aim of the research reported in this paper was to add to a developing body of knowledge relating to Web 2.0 technologies in teaching and learning. The focus was on identifying whether the technology (in this case web logs) used by pre-service teachers during their training course, supported by appropriate pedagogy, was cascaded into their own practice once they had qualified. A further aim was to identify the enablers and inhibitors to cascading the pre-service teachers' use of web logs once they were in their first year of teaching.

The term 'web log' originated from the similarity of usage with the ship log, that is, entries in a journal style in chronological order. Rettberg (2008) provides an extensive history of web logs and explains how the term has become shortened to 'blogs'. Blogs are described as 'easily created, easily updateable Web sites that allow an author (or authors) to publish instantly to the Internet from any Internet connection' (Richardson, 2010, p. 17) and a 'commentary or news on a particular subject or from a particular perspective in the role of an online diary' (Minocha, 2009, p. 357). Blogs have become widely used across the internet as a tool, partially because of their accessibility, and partially because of their ease of use, allowing non-technical people to contribute to websites (Hramiak, Boulton, & Irwin, 2009).

Context

This paper reports research that took place during 2008-2010 at two Universities in the UK, into the use of Web 2.0 technology in Initial (pre-service) Teacher Education (ITE) courses and how this is cascaded into the first year as a newly qualified teacher (NQT). The pre-service teachers at Nottingham Trent University (NTU) and Sheffield Hallam University (SHU) (n=33) who took part in the research were all on a one year Post Graduate Certificate in Education (PGCE) course for pre-service teachers working in the secondary education phase (age 11-18). The pre-service teachers all had a degree in a computer related subject and were specialising in Information Communications Technology (ICT). There were fifteen pre-service teachers in the NTU cohort and eighteen pre-service teachers in the SHU cohort. The research took place in two phases: phase lasting one year taking place during pre-service training, and phase two taking place when the group were working as NQTs in secondary schools.

The PGCE courses at both universities followed a similar pattern, both being one-year courses involving time in secondary schools as well as periods in university. In the first term the pre-service teachers spend approximately six weeks in university followed by approximately seven weeks in a secondary school setting. The pre-service teachers then return to university in the second term for a further seven to eight weeks, followed by approximately thirteen weeks in a different secondary school setting before completing the course. The research reported in this article reflects two phases of data generation. Phase one took place during the PGCE one year course. Phase two took place when the pre-service teachers had finished their PGCE and were working as full-time NQTs in secondary schools.

The use of blogs at both universities was a mandatory aspect of the course which had been embedded into course delivery in the previous year (Hramiak, Boulton and Irwin, 2008). The prior experiences of pre-service teachers are often echoed in their future pedagogy through a process referred to by Lortie (1975) as the Apprenticeship of Observation. Consequently, it is essential that pre-service teachers experience the full pedagogical potential of web 2.0 technologies to promote interaction, peer support, criticality and formative feedback through informed instruction and tuition. The pre-service teachers were introduced to pedagogy for using innovative technologies in their classroom during their university taught sessions during the first term (October-November). Opportunity to critically discuss and refine this pedagogy was provided through further university sessions after the pre-service teachers had opportunity to use the blogs in their own teaching (February). Peer support was provided through an on-line community blog and pre-service teachers received formative feedback from tutors visiting them on teaching experience in their placement schools.

During the first term of the course the pre-service teachers at both universities were introduced to using blogs, both as a reflective tool, that is a private place to critically reflect on and develop their professional practice as part of their professional development (Boulton and Hramiak, 2012) and as a classroom tool supported by pedagogy (Hammond et al., 2009).

Both cohorts comprised of male and female pre-service teachers with an age range from 21 to 55. All had access to ICT facilities throughout their university course including the blog tool. The blog tool was different at each institution: at NTU the tool used was external to the university's provision, freely available on the Internet (LiveJournal©), while at SHU this was part of their Virtual Learning Environment (BlackBoard©). In similar research done by Sharma (2010), a need for an initial orientation session on blogs was identified. In this research, however, although only one student had used a blog prior to the course, no orientation was provided as both tools were found to be intuitive; no students reported any problems.

Literature review

Rettberg (2008), tracing the development of blogs indicates that they were first used in 1997. Over the last decade various researchers and authors have indicated a range of possible uses for blogs in education. Examples include uses such as improving communication from the classroom/school to parents and the community (Catalano, 2005), students practising writing skills online and keeping a portfolio of accomplishments and reflections (Bonk and Zhang, 2006) and fostering student interaction online (Beldarrain, 2006). Kim, (2008) in completing a literature review of barriers to successfully integrating ICT in teaching, concluded that there is value in using blogs in educational settings. Other researchers have analysed the dimensions of blogs in relation to successful use in some university and college contexts and the role they might play in education and professional contexts (Oravec, 2003).

There are mixed findings reported by researchers on the use of Web 2.0 technologies in teacher education with reports in the educational press indicating that there may be some positive resistance to the use of e-learning and associated technology with pre-service teachers by academics (Attwood, 2009). Divintini, Haugalokken and Morken (2005) report limited use of blogs by pre-service teachers. Martindale and Wiley (2005) report that blogs were an effective tool for promoting pre-service teacher writing skills finding that blog posts

became longer and more thoughtful throughout the course, and (Oti & Clarke, 2007)) found that blogging could be time consuming and questioned its value. Franklin (2007, p. 283) found 'what preservice teachers are taught in teacher preparation programs does not appear to transfer to their classrooms'. While researchers such as Dickey (2004), Bonk and Zhang (2006), and Boulton and Hramiak (2012) report success with the use of blogs with pre-service teachers using them as means for communication and reflection on their teaching practice, and identifying, in part, the role of virtual space in their success.

Research by Hammond et al. (2009) indicates that the introduction of technologies during teacher training enables pre-service teachers to develop an understanding of related pedagogy. Gaffney (2010, p. 8) also reports that pre-service teachers need opportunity to develop confidence and that the use of this technology will 'support the achievement of higher level goals'. Wozney, et al. (2006) found that for the successful integration of technologies teachers need to perceive the value of technology use, while Sorebo et al. (2009) found that in terms of using e-learning in their own practice, teachers needed intrinsic motivation. Richardson (2010) comments on the need for teachers (in this case pre-service teachers) using new technologies to gain a better understanding of pedagogy and effective use of technology in the classroom before teaching with them, thus supporting the findings of Koehler and Mishra (2005).

Beyond teacher training, researchers report confident results in the use of blogs in education. For example Instone (2005) reports on the use of multi-participant blogs as a successful component of a professional development program for managers, and Beldarrain (2006) reports success with fostering student interaction on-line using blogs. Reports from Australia indicate the successful use of blogs as part of a range of tools used to transform a face to face course at masters level to one that was predominantly online (Hoven, 2006), while Sharma (2010), reporting small scale research findings, indicates that when using blogs to encourage reflective practice with undergraduate students there was mixed success.

Research findings align the successful integration of technologies in the secondary classroom with developing appropriate pedagogy enabling criticality, a propensity to see the value of technologies in the classroom and suggesting that the interaction of the pre-service teacher and the environment is pivotal (Galan and Blanco, 2004; Mukama and Andersson, 2007; Davis, Preston and Sahin, 2008; Hammond et al., 2009; Granberg, 2009). Larose et al. (2009) argue that practices observed by pre-service teachers during training might optimise the chances of these future teachers using technology in their own classrooms, while Bingimlas (2009) drawing on existing literature including Grabe and Grabe (2007) identified a range of barriers to the integration of ICT in education, some of which resonate with findings by Meyer et al. (2011).

In light of the literature reviewed, it was clear that there were some successes using blogs in the field of education, however, it was also identified that pre service teachers needed an understanding of related pedagogy and confidence in using this technology within a supportive environment.

Methods

A predominantly qualitative and interpretive approach was taken for this study (Bogdan & Biklen, 1998). The research represents small scale research investigating a particular set of pre-service teachers at different institutions on similar training courses - the

PGCE. The collaboration between NTU and SHU focussed on collating similar data sets (Groom & Maunonen-Eskelinen, 2006) to identify how the blogs supported reflective practice and as a classroom resource (phase one), and then investigated its cascading into secondary schools (phase two). The use of multiple sources of evidence, gained from using different methods to collect the data provided triangulation of data and added rigour to the conclusions drawn from the data (Cohen, Manion, & Morrison, 2007).

As stated above two phases of research took place. Throughout the research the authors wanted to embrace the use of new technologies and provide opportunity for pre-service teachers to develop skills in using blogs, identify where the use of this technology would enhance the experience of their pupils, and be confident in using blogs in teaching and learning, supported by the pre-service teachers' developing understanding of appropriate pedagogy (Webb and Cox, 2004; Drent and Meelissen, 2008; Hammond et al., 2009; Minocha, 2009; Meyer et al., 2011). The authors believed it was important to introduce the technology methodically and reflectively to encourage similar processes for the pre-service teachers to follow once they were qualified teachers. Drawing on the experiences of other researchers, discussed in the literature review, the authors ensured opportunity for criticality, a shared pedagogy, as well as support and encouragement from university tutors, school based mentors and the pre-service teachers' peer group.

In phase one, an analysis was undertaken by the two universities to determine attitudes and perceptions of blogging as a tool for reflective practice which developed into the use of blogs as a resource in the secondary school classroom (Hramiak, Boulton, & Irwin, 2008). The authors worked with their group of pre-service teachers from the full-time PGCE cohort at their University (n=35). The data collection for this analysis was via questionnaires and observation during the school-based experience. In addition, an evaluation and review of existing practice within the two courses at NTU and SHU in this area of pre-service teacher training was undertaken.

In order to introduce the technology methodically the pre-service teachers were introduced to blogs early in the course and provided with opportunity to experience writing blogs themselves (Richardson, 2010) as a tool for developing reflective practice (Boulton and Hramiak, 2012). During the first school placement the pre-service teachers were required to use blogs, where appropriate, within their classroom practice; where this was not appropriate they were required to identify places in the curriculum where it would be appropriate to use blogs to enhance the learning of their pupils. When the pre-service teachers returned to university they worked in groups to discuss the use of blogs within the secondary curriculum, thus building their understanding of the pedagogy of using blogs and other Web 2.0 technologies in teaching, learning and assessment (Hammond, 2009). Each group then shared their discussions with the whole group thus developing a repertoire of opportunities to use blogs during their second school experience. During the second school experience all students were expected to use blogs within their teaching and complete a short report reflecting critically on their experience of this.

In phase two, where the pre-service teachers were working as NQTs in secondary schools, a total of five pre-service teachers from the SHU cohort and five pre-service teachers from the NTU cohort, now qualified teachers, were interviewed. These participants were selected to provide a representative sample based on age and gender. The participants were informed that they could choose not to take part in the research and were able to withdraw at

any point. All selected participants agreed to take part, and none chose to withdraw throughout the research. The interviews followed open questions:

- to identify if and how pre-service teachers were using blogs in their own teaching in schools now they were qualified teachers;
- to identify if they had included the use of blogs in their planning during the academic year;
- to ascertain what the respondents perceived the barriers to be if they were not cascading the use of blogs into their teaching;
- to ascertain if any respondents had cascaded their skills in using blogs to colleagues in their schools.

Where possible, interviews were conducted face to face; where this was not possible the participants were interviewed via telephone. Interviews were conducted during the second term of the academic year in which the respondents were employed as newly qualified teachers. At NTU an invitation was also sent to the remainder of the phase one cohort to contribute to the research, resulting in an additional seven participants completing an on-line questionnaire which had been designed to reflect the interview questions and which also provided opportunity for additional comments and data. This represented a total of seventeen respondents, that is, fifty per cent from phase one who participated in phase two.

The data collected from the phase two interviews was coded and analysed to identify a range of factors that were key inhibitors and enablers to cascading technologies into schools from pre-service training. The data established whether the technology used by pre-service teachers during their training course, supported by appropriate pedagogy, was cascaded into their own practice once they had qualified. A table was also constructed drawing on key findings from the literature so that comparison could be made with existing research. The findings are described in the next section of this paper.

Findings

It is worth noting that the responses from both cohorts produced similar results; so similar that it was not possible to draw different conclusions from each cohort. It may be that by working collaboratively across the two universities, although the authors were are able to increase the reliability of the data while recognising that the sample size was limited to two cohorts of students, may, to some extent, have caused the similarity.

Reflections on findings from Phase 1

By the completion of their course the pre-service teachers reported a good understanding of pedagogy in using blogs in the classroom and a range of examples of usage to draw on in their teaching. All respondents were positive about using Web 2.0 technologies as a way of engaging secondary pupils and all reported confidence with both their pedagogical development and in using blogs for teaching and learning. In addition, some of the respondents (n=4) reported that their school-based mentors had encouraged them to lead staff development events in using blogs and other Web 2.0 technologies, providing further evidence of successful cascading during their training. The respondents recognised the level of support during their course by their university tutors, school based mentors and their peer group; this became of increased importance in phase two.

By the end of Phase one, the pre-service teachers were developing new pedagogy for using Web 2.0 technology in the classroom. That is, in planning for teaching, they needed to build in opportunity to facilitate collaboration and interaction with their learners; thus going beyond simply having to think about the technical aspects, and focussing more on what was happening in the classroom in terms of teaching and learning. The respondents reported that they had to consider Web 2.0 technology for assessment and monitoring and also reported that they gave feedback via the web logs as an alternative the usual paper based feedback used with their pupils. Therefore, the findings of Webb and Cox (2004) that pedagogy becomes more complex when you introduce Web 2.0 technology into the classroom were supported through the findings of this research.

Phase 2: cascading the blogs into classroom practice

The results of this study indicate that five of the respondents from each cohort had utilised blogs within their classrooms but reported this was limited rather than extensive use. Three of these ten respondents reported that using blogs engaged their pupils in learning and thus resulted in a higher level of achievement.

Four respondents indicated that they were intending to develop the use of blogs within their classroom practice in the next twelve months. Three respondents indicated they had no plans to use blogs, or any other Web 2.0 technologies in their first year as a qualified teacher.

There were many positive responses. For example, one of the respondents had been identified as the digital champion for the school. He was using blogs for his Key Stage four and five classes (age fourteen to eighteen) and had built this into formative assessment through reflection on project development through their blogs. He felt the use of blogs had raised the level of achievement and engaged pupils who were often disinterested in lessons. This teacher had also used blogs with some Key Stage three (age eleven to fourteen) children and again commented that the blogs were engaging the children and helping them to achieve higher levels:

'...the kids love it, it's sexing up the curriculum' (Student five, cohort A)

Another respondent stated:

'I used a blog tool for the [GCSE] group to record the development of their project [to foster student interaction]. *The group enjoyed this so much that I am going to introduce a Wiki to develop group project work'* (Student three, cohort A)

Of the fourteen respondents who had either used or were intending to use blogs in their first year as a qualified teacher, over half of the respondents indicated that they had either trained colleagues in how to use blogs, or had been asked to run a training session within their school.

When asked why the blogs were not used more extensively in their classrooms a variety of barriers were identified as follows, these are described in detail below with evidence from the data to support these findings:

Pupils lacked the skills for this technology. Over half of the respondents commented on the lack of skills pupils had in using blogs. When probed on responses the significant

problem was the lack of time (see below) to up-skill their pupils during lessons. The respondents found the time far more pressurised in class than they had when they were pre-service teachers. Those with pupils working towards external examinations reported the lack of skills as a high level problem. The respondents who reported this barrier were making plans to introduce blogs with younger pupils who did not have the same pressures of time.

There was insufficient time in the curriculum to teach pupils the necessary skills. Seventy per cent found time to be a key barrier. Further analysis of the data indicates that this barrier was significantly higher for those teaching classes where external examinations created additional pressures on time. The greatest success was with younger pupils who had more time for creativity in the curriculum. All respondents planned to introduce Web 2.0 technologies lower down the school in order to develop key skills on which to build as pupils progressed.

The school's virtual learning environment (VLE) did not support a blog tool. This was not a significant problem. As part of the pedagogical discussions at university there was opportunity to explore a range of different blogging sites available via the Internet that provided free protected space which would support the use of blogs in schools. The NQTs therefore adapted their planning to reduce this barrier. However, it was reported as a barrier to two respondents who were not able to introduce blogs as the school policy on internet safety did not enable use of software sources beyond those within the VLE or approved by the senior management team (SMT). Both of the respondents reported that they had not fully explored the process for gaining SMT approval.

[...]no plans to use it with the pupils as the VLE doesn't allow usage due to bullying, and most staff don't use it (the VLE*)'*. (Student five, cohort B)

There was a lack of support to introduce new technologies. Comments on lack of support were frequent among the respondents (n=10), and reflected a common theme, for example, one participant reported

'We have only just got a VLE and there is a blog on it but no-one uses it'. (Student two, cohort A)

The lack of support was reported as two aspects; firstly a lack of support from senior managers, which two respondents perceived was a lack of vision by SMT, and secondly a lack of support systems once the respondents became NQTs. The analysis of the data indicates that once the pre-service teachers became full-time teachers they did not continue with existing communities and lacked confidence to build a new community of practice in the schools where they were employed:

'...there was no cascading or training on blogs with colleagues.' (Student two, cohort B)

'If there was a group of us in school pushing to use the blogs and supporting each other it might take off'. (Student two, cohort B)

There were problems accessing blogging sites due to their school internet firewalls. This was reported by six of the respondents; four had been able to work with the school technicians to enable access to an appropriate blogging site. One pre-service teacher commented:

'*We have discussed briefly about using blogs in the classroom but because of firewall settings it will not be easy including it in our planning as this might not work*'. (Student one, cohort B)

Thus, while barriers were experienced by the respondents there was some evidence emerging that using the Web 2.0 technologies in lessons was engaging pupils and that in some instances pre-service teachers were reporting higher achievement in lessons which respondents perceived was due to the use of this technology.

Analysis and discussion

The analysis of the data suggests that there were several factors which influenced the teachers in cascading their use of blogs into their teaching once they had completed their PGCE, some of which reflects the research of others as discussed below.

Barriers to cascading the use of blogs into teaching

Ten of the respondents in phase two of this research commented that there was a perceived lack of support and vision by managers in their schools; with regards to the use of ICT and that a more positive culture with respect to the use of innovative technologies would help new teachers to cascade this into their teaching. Other research has also found this to be true, and in some research indicates that the ICT competence of school leaders may determine whether or not ICT is championed in schools (Stuart, Mills, and Remus, 2009; Hadjithoma and Karagiorgi, 2009; Meyer et al., 2011).

Lack of training and technical support was not reported as a problem or barrier by the respondents in this research which had been identified by others (Bingimlas, 2009). However, there were comments from the respondents relating to perceived negative attitudes in school being a barrier to cascading. Lack of time and accessibility to blog software were identified in this research, and thus correlates with the research of Bingimlas who identifies barriers to the successful introduction of ICT at teacher level as a lack of teacher confidence, resistance to change and negative attitudes; and barriers at school level as lack of time, lack of accessibility, lack of effective training and lack of technical support.

A third of respondents commented on the lack of support in developing the use of new technologies once they were qualified as teachers and in post. These respondents commented positively on the level of support in using blogs during their pre-service training year (phase one), but indicated they did not have the same level of support once they were qualified (phase two). The respondents stated that they were too inexperienced and new to their respective schools to start up a community of practice with other interested colleagues where they could have established a mutual support group. This aligns with the research of others in the field who report that local support when developing new technologies is a key attribute for the successful integration of new technologies (Hodgkinson-Williams et al., 2008; Meyer et al., 2011). This may be an area for further research because it raises the question of why NQTs only look to those within their own school for support when new technologies provide opportunities to set up or join existing communities of practice across the world.

An organic approach to training was arguably experienced by the participants of this study as set out earlier in this paper, in that they learnt in a gradual way over time for the duration of their course from mentors, tutors, and from each other. This organic approach,

however, does not seem to have had the positive effect identified by others who support a more ecological view of the diffusion of ICT innovations in education (Davis, Preston, & Sahin, 2008). It could be argued that the ecological climate of schools, once the respondents were teaching in them as qualified teachers was a much harsher climate, with fewer facilities and time, thus denying them the opportunities to reflect and engage with new technologies in the same way they did when they were pre-service teachers.

In the research reported in this paper the respondents stated that they had the time and support to be critical when introducing innovations while pre-service teachers, but lacked this time once they became qualified teachers. This is also reflected by Mukama and Andersson's (2007) study, which indicated that teachers needed time to become able to use ICT critically in their practice, and also in the study by Kilbourne and Alvarez who found that pre-service teachers found it difficult to integrate information technology critically into their classrooms (Kilbourne & Alvarez, 2008).

The respondents also reported that access to blogging software was a barrier to cascading this use into their professional role (n=4). This had not been reported in phase one, that is during their PGCE course. The access problems varied and included internet firewalls set up internally by rigorous systems required by school managers, externally by local authority broadband consortiums and by restrictions to the school's virtual learning platform by managers keen to only use the school virtual learning platform which did not have a blog tool. Other studies also discuss access as a potential barrier in terms of access to technology in schools (Gaffney, 2010; Hammond, et al., 2009; OFSTED, 2009; Pelgrum & Doornekamp, 2009).

Enablers to cascading the use of blogs into teaching

The British Educational and Communications Technology Agency (Becta) (2003) identify five enablers as being necessary to provide good learning opportunities in secondary schools: ICT resources, school leadership, ICT leadership, general teaching, and ICT teaching. However, Becta makes the point that these enablers are 'not sufficient in themselves to provide good ICT learning opportunities'. A report produced by the UK's Office for Standards in Education (Ofsted) based on evidence of school inspections in England from 2005-2008 on the importance of ICT in primary and secondary schools also comment on the importance of the vision of school leaders for the place of ICT in learning, infrastructure, resources and staff training, thus suggesting that these are significant in enabling the good learning opportunities in schools (OFSTED, 2009).

The data in the research reported in this paper identified that the main enabler to the cascading of blogs into classroom practice was the experience of the respondents from their PGCE experiences. This correlates with findings by Franklin (2007). All the respondents reported confidence in using blogs and all were able to cite examples of using blogs in their teaching during their PGCE. All respondents were also able to explain the pedagogy of using blogs in their teaching, were able to engage critically in discussing the use of blogs in their classrooms, and understood the importance of the appropriateness and relevance of choosing to use blogs to engage their pupils and enhance the delivery of the curriculum. However, for some this confidence and experience gained as pre-service teachers had not yet been harnessed in their NQT year.

In this research, all respondents indicated that they were motivated to use web blogs and other new technologies in their teaching (Sorebo, et al., 2009). Those who had support

from colleagues in their school reported that they had utilised blogs and were encouraged by the engagement of their pupils in developing this usage and also in introducing other Web 2.0 technologies. Support from senior managers was seen as particularly important by seventy per cent of the newly qualified teachers. This correlates with Franklin's findings (2007) listing 'leadership' as one of the key factors in the successful implementation of using computers in elementary schools in the USA. Franklin found access and availability of computers also significant factors, but these were not identified as barriers by the teachers in this research.

Time was both an inhibitor and an enabler. Examples cited were that while they were pre-service teachers, time was an enabler, that is, they had sufficient time to use the blogs and identify where in the curriculum blogs could be used to engage pupils and enhance their learning. Once they had qualified and became NQTs, however, the lack of time meant that time became an inhibitor; this correlates with findings by Franklin (2007) and Meyer et al. (2011) who found time to be the highest factor of barriers to integrating new technologies into the classroom.

Conclusion

At the start of this paper the authors made reference to Pelgrum and Doornekamp's Report (2009) commissioned by the EC which indicated the recognised importance across Europe of pre-service teachers developing ICT skills and pedagogical ICT competencies. In the literature review the authors also referred to the findings of others that the knowledge of how and when to use technology in the classroom, together with an understanding of the pedagogy, and opportunity to reflect critically, provided pre-service teachers with an inclination to use ICT, or a propensity to see its value in the classroom (Mukama & Andersson, 2007); Hammond et al., 2009).

The pre-service teachers in this study reported confident use of blogs in the classroom, they knew where the technology could be used to enhance the secondary school curriculum and had a good understanding of the pedagogy. However, there were inhibitors identified once they were in schools without the support and encouragement of their university tutors, mentors and peers.

In the research reported here the use of blogs as an embedded part of the training course enabled pre-service teachers to understand the wider implications of Web 2.0 technologies within a broad learning context, develop appropriate pedagogy and criticality, but other issues such as time, access and support became greater inhibitors in the school environment.

While some media reports (Attwood, 2009) suggest a proliferation of new technologies are being used in secondary schools, this research and that of others cited in this paper would suggest a different picture: 'the dissemination of knowledge and experience of the use of ICT amongst all stakeholders in the educational system is relatively slow' (Van Schie, 1997).

The school culture also needs to be open to embedding new technologies within the curriculum. Senior managers may want to encourage newly qualified teachers to offer workshops and support, to cascade new technologies and the associated pedagogy into their

school curriculum. This research indicates that school managers should be encouraged to embrace the enthusiasm and skills of NQTs who often have high level skills, motivation, confidence, criticality, knowledge and understanding of when and how to use new technologies in the classroom. Senior managers may also want to support new teachers in joining communities of practice to support the introduction of new technologies.

The evidence from this research indicates Key Stage 3 (age eleven to fourteen), or earlier, would be the most appropriate time to introduce Web 2.0 technologies, that is while there is still time for creativity in the curriculum.

As more schools embrace new technologies this research should provide answers to potential barriers and inhibitors. This research indicates that early professional support and development should be on-going and assumptions about new teachers as champions of cascading innovative use of Web 2 technologies into their practice as NQTs may be over optimistic. If we are to draw on Web 2.0 technologies such as blogs to enhance the secondary curriculum, engage learners and improve achievement, we must encourage school managers to have a clear vision for embedding new technologies across the school. This research also indicates the importance for school managers to consider how to reduce barriers to using new technologies, provide greater opportunities for the use of sharing experiences of using new technologies by teachers, provide the time for teachers to develop these new technologies within their classrooms, encourage teachers to work more collaboratively and harness the expertise of NQTs with new technologies.

References

Attwood, R.(2009) Why offline? It's very personal. *Times Higher Education,* October 22.

Beldarrain, Y. (2006). Distance education trends: integrating new technologies to foster student interaction and collaboration. *Distance Education 27, no.* 2: 139-153.

Bingimlas, K.A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: a review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education 5, no.* 3: 235-245.

Bogdan, R.C., & Biklen, S.K. (1998). *Qualitative research for education: an Introduction to theory and methods*. Boston: Allyn and Bacon.

Bonk, C.J., & Zhang, K. (2006). Introducing the R2D2 model: online learning for the diverse learners of this world. *Distance Education* 27, no. 2: 249-264.

Boulton, H. & Hramiak, A. (2012). E-flection: The development of reflective communities of learning for trainee teachers through the use of shared online web logs. *Journal of Reflective Practice, (to be published 2012).*

British Educational and Communications Technology Agency (2003). Secondary schools - ICT and standards. Retrieved from http://www.becta.org.uk [accessed 21 May 2010]

Catalano, F. (2005). Why blog? *The Higher Education Journal,* 33, no 5: 22-29.

Cohen, L., Manion L., & Morrison K. 2007. *Research methods in education* (6th ed.). London and New York: Routledge.

Davis, N., Preston C., & Sahin I. (2008). Training teachers to use new technologies impacts multiple ecologies: evidence from a national initiative. *British Journal of Educational Technology* 40, no. 5: 861-878.

Dickey, M.D. (2004). The impact of web-logs (blogs) on student perceptions of isolation and alienation in a web-based distance-learning environment. *Open Learning* 19, no. 3: 279-291.

Divintini, M., Haugalokken O., & Morken E. (2005). *Blog to support learning in the field: lessons learned from a fiasco*. Paper presented at the Fifth IEEE International Conference on Advanced Learning Technologies (ICALT), March 13-17, in Miami, USA.

Drent, M., & Meelissen M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers and Education*, 51 no. 1: 187-199.

Franklin, C. (2007). Factors that influence elementary teachers' use of computers. *Journal of Technology and Teacher Education,* 15 no. 2: 267.

Gaffney, M. (2010). *Enhancing teachers' take-up of digital content: factors and design principles in technology adoption*. Australia: Education Services

Galan, J. G., & Blanco, S. M. (2004). Design of educational web pages. *European Journal of Teacher Education, 27 no.* 1: 99-104.

Grabe, M., & Grabe, C. (2007). *Integrating technology for meaningful learning*. Boston: Houghton Mifflin.

Granberg, C. (2009). Implementing digital individual development planning in teacher education: the challenges of communication in relation to the development of ICT supported methods. *Technology, Pedagogy and Education, 18* no. 2: 123-135.

Groom, B., & Maunonen-Eskelinen, I. (2006). The use of portfolios to develop reflective practice in teacher training: a comparative and collaborative approach between two teacher training providers in the UK and Finland. *Teaching in Higher Education, 11 no.* 3: 291-300.

Hadjithoma, C., & Karagiorgi, Y. (2009). The use of ICT in primary schools within emerging communities of implementation. *Computers and Education,* 52 no. 1: 83-91.

Hammond, M., Crosson, S., Fragkouli, E., Ingram, J., Johnstone-Wilder, P. & Johnstone-Wilder, S. (2009). Why do some student teachers make very good use of ICT? An exploratory case study. *Technology, Pedagogy and Education, 18* no. 1: 59-73.

Hodgkinson-Williams, C., Slay, H., & Sieborger, I. (2008). Developing communities of practice within and outside higher education institutes. *British Journal of Educational Technology, 39 no.* 3: 433-442.

Hoven, D. (2006). *Designing for disruption: remodelling a blended course in technology in (language) teacher education*. Paper presented at the 23rd Annual Conference of the Australasian society for Computers in Learning in Tertiary Education, (ASCILITE) December 3-6, in Sydney, Australia.

Hramiak, A., Boulton, H., & Irwin, B. (2008, June 2008). *Giving voice to learners: using private blogs to develop self-reflection.* Paper presented at the IFIP :Valuing individual and shared learning the role of ICT

Charles University, Prague, Czech Republic.

Hramiak, A., Boulton, H., & Irwin, B. (2009). Trainee teachers' use of blogs as private reflections for professional development. *Learning, Media and Technology, 34*(3), 259-269.

Instone, L. (2005). *Conversations beyond the classroom: blogging in a professional development course.* Paper presented at the 22nd Australian Society for Computers in Learning in Tertiary Education (ASCILITE) Conference, December 4-7, in Brisbane, Australia.

Judson, E. (2006). How teachers integrate technology and their beliefs about learning: is there a connection? Journal of Technology and Teacher Education, 14 no. 3: 581-591.

Kilbourne, B., & Alvarez, I. (2008). Root-metaphors for understanding: A framework for teachers and teacher educators of information and communication technologies. *Computers and Education, 50* no 4: 1354-1369.

Kim, H.N. (2008). The phenomenon of blogs and theoretical model of blog use in educational contexts. *Computers and Education, 51 no* 3: 1342-1352.

Keohler, M.J., & Mishra, P., (2005). What happens when teachers design educational technology? The development of technological pedagogical content knowledge. *Journal of Educational Computing Research,* 32 (2), 131-152.

Larose, F., Grenon, V., Morin, M.P., & Hasni, A. (2009). The impact of pre-service field training sessions on the probability of future teachers using ICT in school. *European Journal of Teacher Education, 32 no.* 3: 289-303.

Lortie, D. (1975). *Schoolteacher: A Sociological Study*. London: University of Chicago Press.

Martindale, T., & Wiley, D. (2005). Using weblogs in scholarship and teaching. *TechTrends, 49 no.* 2: 55-61.

Meyer, E., Abrami, P.C. Wade, C.A. Aslan, O. & Deault, L. (2010). Improving literacy and metacognition with electronic portfolios: teaching and learning with ePEARL. *Computers and Education,* 55 no. 1: 84-91.

Minocha, S. (2009). Role of social software tools in education: a literature review. *Education Training,* 51 no 5/6: 353-369.

Mukama, E., & Andersson, S.B. (2007). Coping with change in ICT-based learning environments: newly qualified Rwandan teachers' reflections. *Journal of Computer Assisted Learning, 24 no.* 2: 156-166.

Office for Standards in Education. (2009). The Importance of ICT in secondary and primary schools, 2005-2008. Retrieved from http://ofsted.gov.uk (accessed 30 June 2011)

Oravec, J.A. (2003). Weblogs as an emerging genre in higher education. *Journal of Computing in Higher Education, 14 no.* 2: 21-44.

Oti, J., & R. Clarke. (2007). *Dyslexia and online writing: student teachers experiences of writing about themselves in a public forum*. Paper presented at the British Educational Research Association Annual Conference, September 5-8, in London, UK.

Pelgrum, W.J., & B.G. Doornekamp. (2009). Indicators on ICT in primary and secondary education. Retrieved from http://ec.europa.eu/education/more-information/doc/ictindicrep_en.pdf [accessed 20 April 2010]

Rettberg, J.W. (2008). *Blogging; digital media and society series.* Cambridge: Polity Press

Richardson, W. 2010. Blogs, wikis, podcasts and other powerful web tools for classrooms (3rd ed). London: Sage

Sharma, P. (2010). Enhancing student reflection using weblogs: lessons learned from two implementation studies. *Journal of Reflective Practice,* 11 no 2: 127-141.

Somekh, B., (2006). *Action Research a methodology for change and development.* Maidenhead: OU Press.

Sorebo, O., Halvari, H., Gulli, V.F., & Kristiansen, R. (2009). The role of self-determination theory in explaining teachers' motivation to continue to use e-learning technology. *Computers and Education, 53 no* 4: 1177-1187.

Stuart, L.H., Mills, A.M., & Remus, U. (2009). School leaders, ICT competence and championing innovations. *Computers and Education, 53 no* 3: 733-741.

Van Schie, J. (1997). A world wide web survey on the use of information and communication technology in education. *European Journal of Teacher Education, 20 no.* 1: 85-92.

Webb, M., & Cox. M. (2004). A review of pedagogy related to information and communications technology. *Technology, Pedagogy and Education,* 13 no. 3: 235-286.

Wozney, L., Venkatesh, V., & Abrami, P.C. (2006). Implementing computer technologies: Teachers' perceptions and practices. *Journal of Technology and Teacher Education,* 14 (1), 173.