"Teachers" does not tell the whole story: Further classification to assist in identifying barriers to the use of ICT in Primary settings

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ABSTRACT

The research uses both qualitative and quantitative methodologies employing multiple sources of data collection. The data collection primarily used a questionnaire survey of primary schools in two English Local Authorities. The qualitative evidence of the teacher sample was through individual semi-structured interviews and a focus group interview of Local Authorities officers. There is an evidence trail which examines academic papers, HMI, QCA, Ofsted and DfES reports. The main findings from these reports indicate that teachers were becoming familiar with the use of computers. They understood the skills involved in using computers but were still uncertain as to a suitable pedagogy which made them lack confidence when using ICT in the classroom. Teachers major difficulty is finding time to keep pace or develop their ICT skills. The reports have a generic view of teachers, with no further analysis of gender, age or experience phenomena. The analysis of these variables concludes that teacher subject knowledge formed through teaching experience of the subject, informs teachers when computers aid teaching and learning.

Index Words: primary education, pedagogy, leadership, time, curriculum, teacher confidence, teacher education, age, gender, teaching experience

1 INTRODUCTION

Computer use is increasingly important in schools for teaching and learning. Governments worldwide have invested huge sums of money to equip schools with classroom computers and broadband internet connections. This paper analyses whether the use of computers by teachers in England has any related factors. Current literature advocates that there are many opportunities for computers to assist in raising standards in teaching and learning. Yet Ofsted and HMI report that there are varying degrees of usage among primary school teachers. This paper investigates whether primary school teachers' report any collective variables regarding their computer usage and whether there are any significant variables such as gender, age or teaching experience associated with teachers' computer usage.

2 LITERATURE REVIEW

Research by The DfES (2005) suggests that since the current methods of teaching and learning have failed, what is required is a new innovative pedagogy appropriate for the 21st. century. The model suggested by Becta (2004; 2007), Scrimshaw (2004) and Holmes and Gardener (2006) is to move from a 'teacher-centred' model to a 'student-centred' model. They do acknowledge that this takes both time and motivation from the teachers, as well as, managerial direction and support.

Inadequate hardware and little relevant software that related to the curriculum, plus variable teacher skills and attitudes were identified by the Stevenson Report (1997) and later HMI (Ofsted, 2005) report that these findings were also the three contributing factors that were essential in raising the quality of teaching using ICT.

In 2007 the National College for School Leadership, in conjunction with Becta, have introduced 'Strategic Leadership of ICT'. This programme is intended to deliver the tools to place technology at the centre of teaching and learning. Head teachers and senior management can now develop ICT to assist in providing very different learning opportunities. Schools need to design an 'integrated pedagogy' as suggested by Cornu (1995).

Kennewell and Beauchamp (2003) imply that teachers need time and support if they are to become confident in the use of computers in the classroom. Becta (2004) agrees with the sentiment and further suggest that educational change is a slow process. It is not only the time to become skilful in using a computer and its programs but also time to incorporate the required pedagogy into the existing curriculum.

Loveless (2003) further suggests that there is a difference between what teachers claim to use ICT for and their actual classroom practice.
Becta (2004) also purport that teachers are reluctant to use new technologies.

These are generic statements regarding teachers; with no acknowledgment that there could be other factors such as age, gender or teaching experience that could be influencing teacher performance.

3 METHODOLOGY

The research data is partly based upon qualitative and quantitative answers from a questionnaire. The questionnaire was initially piloted with non-participants and as a result adjusted from participant feedback. The amended questionnaire was then circulated to the ICT co-ordinator in primary schools from two English local authorities. Further deeper qualitative data was gained through semi-structured interviews with a cross-section of teachers, who matched the national and local profile for teachers in gender, age and teaching experience; followed by a focus interview with local authority officers with responsibility for primary education.

4 ANALYSIS OF DATA

		Frequency	%
Valid	Every lesson	1	1.47
	Frequently	7	10.29
	Occasionally	28	41.16
	Infrequently	27	39.69
	Never	2	2.94
	Total	65	95.55
Missing		2	2.94
Total		67	98.49

Table 1 – Questionnaired Teachers use of computers in the classroom

Table 1 would suggest that teachers feel that computers are being used frequently and occasionally, with only 2.94% saying that they never use computers.

Immediately this brings up basic questions. Which teachers are not using computers? Are there any comparisons between the teachers who are not using computers in the classroom? What problems are there for teachers' none use of computers in the classroom?

Gender	Male	% Male	Female	% Female	Total	% Total
Teachers who need more time with computer programs	22	88	41	97.6	63	92.61
Teachers who do **not** need more time with computer programs	3	12	1	2.4	4	5.88

Table 2 – Questionnaired teachers who felt they needed more time to understand ICT Programs

Table 2 would suggest that both male and female teachers are having some difficulty with the programs. 92.61% of all teachers were saying that they need time to understand, navigate and know what the programs can do.

Three other recurring themes, regarding computer programs were:

1) The cost of programs and site licenses
2) The ease of access and navigation
3) The ease of access and usability of Microsoft programs.

The questionnaire respondents were approximately 1/3 male and 2/3 female (Table 3).

Gender	Count	%
Male	25	37.3
Female	42	62.7
Total	67	100

Table 3 - Questionnaire Respondents by Gender

There was inconsistency when comparing the respondents ages to their gender (Table 4).
There were four times more females in the 20 – 30 year olds, in the 31 – 40 and 41 – 50 year olds had a ratio of one to two of males to females while the 51 – 60 year olds were equal between both males and females.

20 – 30 Yrs Old		31 – 40 Yrs Old		41 – 50 Yrs Old	
Male	Female	Male	Female	Male	Female
2	8	7	13	8	13
2.98%	11.92%	10.43%	19.37%	11.92%	13.97%

51 – 60%		Sub-Total		Total
Male	Female	Male	Female	
8	8	25	42	67
11.92%	11.92%	37.25%	62.58%	99.83%

Table 4 – Ages – Gender Cross Tabulation of Questionnaire Respondents

With the teaching experience cross tabulated with gender (Table 5) there was inconsistency for the ratio up to 21+ years of experience where it then became 50:50.

Teaching experience in years	Gender					
	Male	Female	Total	% Male	% Female	% Total
0-10	7	12	19	10.44	17.88	28.32
11-20	5	17	22	7.45	25.33	32.78
21-30	11	11	22	16.39	16.39	32.78
31- 40+	2	2	4	2.98	2.98	5.96
Total	25	42	67	37.26	62.58	99.84

Table 5 – Teaching experience – Gender Cross tabulation of Questionnaire Respondents

	Gender				
Frequency computers used	Male	% male	Female	% Female	% Total
every lesson	0	0	1	1.49	1.49
frequently	3	4.47	4	5.6	10.07
occasionally	9	13.41	19	28.31	41.72
infrequently	10	14.9	16	23.84	38.74
never	1	1.49	1	1.49	2.98
No answer	2	2.98	1	1.49	4.47
Total	25	37.25	42	62.22	99.47

Table 6 – Gender – Frequency of use of computers Cross tabulation of Questionnaire Respondents

Table 6 suggests that females use computers proportionally more than males. The data shows that 33.91% of female use computers in class while male usage is only 17.88%.The data implies that there might be a gender issue, but not in the form expected.

Younger teachers were educated in an educational system where computers were the norm. It would not, therefore, be surprising for them to be familiar with the use of computers for teaching and learning. It would not be unusual for younger teachers to be using computers during their lessons. Are younger teachers using ICT in the classroom more than older teachers?

Frequency computers used	Age							
	20 - 30	%	31-40	%	41-50	%	51-60	%
every lesson	-	-	-	-	1	1.49	-	-
frequently	-	-	2	2.98	4	5.96	1	1.49
occasionally	5	7.45	8	11.92	7	10.43	8	11.92
infrequently	5	7.45	8	11.92	7	10.43	6	8.94
never	-	-	-	-	1	1.49	1	1.49
No reply	-	-	2	2.98	1	1.49	-	-
Total	10	14.9	20	29.8	21	31.29	16	23.84

Table 7 – Age – Frequency of use of Computers Cross tabulation with Questionnaire Respondents by age

Table 7 surprisingly indicates that younger teachers are not using ICT other than 'occasionally' and 'infrequently'. Becta (2004; 2007) and Scrimshaw (2004) suggest that this could be due to their lack of confidence regarding their subject knowledge compared to their ICT knowledge and skill. The more experienced older teachers are able to identify areas where computers can support and extend teaching and learning.

The under usage of computers cannot be attributed to just the lack of pedagogical understanding of where computer usage assists with teaching and learning within the subject area.

Time to understand programs	Gender				
	Male	Of Total %	Female	Of Total %	Total %
Yes	2	1.34	4	2.68	4.02
	Age								
	20 - 30	%	31 - 40	%	41-50	%	51 – 60	%	Total %
Yes	2	1.34	1	0.67	2	1.34	1	0.67	4.02
	Teaching experience							
	0-10	%	11-20	%	21-30	%	Total %	
Yes	2	1.34	2	1.34	2	1.34	4.02	

Table 8 – How many Questionnaire Respondents feel they need more time to understand programs

When gender is taken as the variable as in Table 8, there is 1 to 2 male to female split with teachers wanting more time to understand programs. The age band has a wave effect but the numbers involved compared with the total are small at only 4.02% requiring more time.

Teaching experience is also is consistent in both its number of teachers and percentages. Again the total percentage of the whole cohort was 4.02%.

	Male	% Male	Female	% Female	Total	% Total
Teachers who feel they need support in the use of pedagogy	18	72	21	50	39	58.2
No mention for the need for pedagogical support	7	28	21	50	28	41.79

Table 9 - How many teachers felt they needed more support in the use of pedagogy

The research found (Table 9) that 58.2% of teachers questionnaired are asking for clarification and some direction regarding their pedagogy with ICT. There were significantly more male teachers (72%) asking for this than female (50%).

5 CONCLUSION

In conclusion, the major issues were; time to increase computer skills, to be familiar with commercial programs and how to use those skills and programs during teaching. They were also concerned as to what was the 'correct' pedagogy when using computers.

The lack of confidence in using ICT in the classroom appears, to cross all boundaries.

It would appear that there is more uncertainty with males regarding their use of pedagogy when using ICT. Males appear to use ICT less in class than females.

Age does not seem to be major factor in the use of computers in the classroom, indeed less experienced teachers were the least users of computers in the classroom. This is not because they lack computing knowledge or skills but rather their teaching experience. This could be due to the difference between subject knowledge per se and their pedagogical subject knowledge. They have subject knowledge but are not fully aware of how they can best put this across to the pupils.

The most influential factor seems to be teaching experience which allows the teacher to determine when computers can be best used for teaching and learning. The experienced teachers are more concerned with how they teach and make interaction with the pupils and not the content knowledge per se. It is the subject matter knowledge for teaching and how best to engage pupils in that subject matter knowledge that concerns experienced teachers. Only through delivering the subject matter knowledge and combining it with their pedagogical knowledge will they begin to be aware of when computers can aid teaching and learning.

6 GLOSSARY

Becta British Educational Communications and Technology Agency

DfES Department for Education and Skills

HMI Her Majesty's Inspectorate

ICT Information and Communication Technology

Ofsted Office for Standards in Education

QCA Qualifications and Curriculum Authority

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