The Question is No Longer 'If', but 'How Best', ICT can be Used in Early Years Practice

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Abstract

This study reports the different documentation that teachers encounter in four countries: England, Scotland, Northern Ireland and Wales. It considers the influence of this documentation on teachers' implementations of ICT in early years practice. This influence is analysed in light of Seymour Papert's 'new forms of learning' (1996).

Early years' teachers need to decide 'how best' computers can be used; it is no longer appropriate to ask 'if' young children should use ICT. This enquiry tries to identify what, if any, issues impact on teachers' decisions about practice. It explores:

- whether 'schoolish' kinds of learning are considered appropriate by the policy makers (as evidenced in the curriculum and other guidance documents) and by the teachers. (as evidenced in discussion responses);
- whether computers are used to exploit 'new forms of learning' consistent with the nature of the child;
- what if any aspects of computer use make teachers 'fearful';
- what, in ideal circumstances, teachers would like to offer young children using computers as a tool for learning in any aspect of the curriculum.

1 Introduction

Debate about young children and their use of computers has raged fiercely and, as with many another fiery situation, has died down showing just occasional flashes in the embers. Fears about 'Fool's gold' seem to have been convincingly challenged (Cordes and Miller 2000, Abbott, Lachs and Williams 2001). What still seems important though is the point made by Papert (1996) that, like any other tool a young child may use, a computer can be used wisely or badly. Papert's view was that asking how old children should be to use computers was rather like asking when they should have crayons or dolls: like these things, computers have many uses. He says:

> I am fearful of using computers as "baby stimulators" and "baby-sitters" by exploiting their holding power before we understand it enough to use it wisely. I am fearful of the idea that children can be better prepared for life by doing schoolish kinds of learning at the earliest possible age. […] To these old objections I add a new one: The computer opens opportunities for new forms of learning that are far more consistent with the nature of the young child. How absurd then to use it to impose old forms.
>
> (Papert 1996:98).

The main thrust of the argument here is that any use of computers should take account of the nature of young children's learning. When we think of ways to harness these as yet only partially understood powerful new technologies to support their learning we need to think about 'new forms.' These 'new forms' seem to me to be more in line with traditional views of early childhood learning which adopt a constructivist or socio-historic view of learning (Cook 2003). Papert's view is that this new tool, with its undoubted holding power, is not best used for old forms of learning or for preparing children for their future lives by engaging them as early as possible in 'schoolish' activities.

Computer use in early years practice entails the recognition of a number of other dimensions as well as Papert's inspirational principles. Practitioners will be influenced by the presentation of national policies in curriculum and other documentation, assessment procedures, their own knowledge and beliefs, resource provision and accountability and pedagogical practices. In the UK in recent years there have been considerable changes in many of these areas and an increasing emphasis on what Bernstein (1991) describes as 'the graded child' with a concomitant focus on the careful control of learning. Children's learning is seen as 'progressing' through predefined sequences and interpreted through 'learning outcomes.' Domain specific terms such as literacy or English are used to describe learning within both the primary and early childhood phases. Although there are differences between the four countries (England, Northern Ireland, Scotland and Wales—considered later). Pollard (2002) suggests that official documentation covers similar areas of study in interestingly different ways.

Computers used to support young children's learning need to be considered within these subject-like divisions

in the UK at present. Already there is a pressure to focus rather more on 'old forms' than new. What other factors influence early year's teachers in deciding 'what' and 'how' to teach? Are the opportunities they make available in their settings which are consistent with curriculum requirements more or less likely to emphasise new or old forms of learning? To what extent do current practices support a view of new technologies as a 'benign addition' (Cuban 2001, Stephen and Plowman 2002), or as improving pedagogical efficiency by replicating existing practices with electronic resources (McCormick and Scrimshaw 2001)?

2 Range of Provision

Three and four year old children living in the UK may be found in playgroups, nursery classes, nursery schools, family centres, with childminders and in some cases, in school. Places may be provided by the private, voluntary or state sector, freely available or fee paying, for part of a day or week or full time. Many children experience a variety of settings during the course of a single day or week. A range of practitioners, coming from diverse backgrounds and possessing a myriad of types and levels of qualification, work with three to five year olds. In comparison to some other countries, UK provision continues to be fragmented and diverse in terms of both provision and children's learning opportunities. Official policy in relation to learning and teaching, as depicted in the written documentation, varies too.

3 What is Meant by the Term 'Curriculum'?

The territory surrounding the nature of 'curriculum', what it is and what we might mean by the term is highly contested and defined in a multiplicity of ways. Burton's recent thematic review of this area suggested that five themes offer a generic way of describing curricula. These themes, 'change, power, culture, knowledge and policy' taken together, she suggests, provide five lenses 'to look at curricula.'

> They underlie the choice and definition of subject matter, they describe the community practices which dictate the structures and relationships embedded in educational organisations, and they draw attention to the way in which those structures and relationships do, and do not, facilitate the experiences of learners.
>
> (Burton 2002: 725)

Burton's dimensions are discernible in the various documents considered here and it seems reasonable to suggest that their content may influence practitioners' choices and so define subject matter. These documents both define 'learning' and exert power by offering exemplification of what learning might look like in practice contexts. To some extent the documents describe practices and relationships within educational settings. For example, most documents suggest how adults should 'be' with children, parents, colleagues and sometimes, the wider community.

Each document would claim to promote and facilitate the experiences of learners but each deals with this in different ways and with varying levels of specificity. The document for Wales, although published in both languages is the briefest (28 pages) while that for England runs to 127 pages. In each country the early years documentation is seen as providing a link with that of the subsequent phases although not always directly. In England the Literacy and Numeracy Strategies provide additional guidance which impacts on 4 and 5 year olds in school settings. Assessment, another important dimension of curriculum, is also treated differently from country to country. In addition there are differences in naming and demarcating boundaries of areas of learning but also some considerable common ground as well as some 'gaps' as Table 1 indicates..

England (2000) Areas of learning and Early Learning Goals	**Northern Ireland** (undated, circa 1997) The Curriculum	**Scotland**(1999) Key aspects of children's development and learning	**Wales** (2000) Areas of Learning and Experience and Desirable Outcomes
Personal, Social and Emotional development	Personal, Social and Emotional development	Emotional, personal and social development	Language, Literacy and Communication skills
Communication, Language and Literacy	Physical development	Communication and Language	Personal and social development
Mathematical development	**Creative/aesthetic development**	Knowledge and Understanding of the world	Mathematical development
Knowledge and understanding of the world	Language Development	Expressive and **aesthetic development**	Knowledge and understanding of the world
Physical development	Early Mathematical experience	Physical development and movement	Physical development
Creative development	Physical development		**Creative development**
	Early experiences in Science and technology		
	Knowledge and Appreciation of the Environment		

Table 1: Learning Domains-ordered and Listed as in the Documents Reviewed

One of the interesting differences is the order in which learning domains are listed in each country. As Anning and Edwards (1999) point out there are considerable differences too in emphasis and tone: some prioritising cognitive aspects of experience and others having a broader, more inclusive focus.

Anning and Edwards also remind us that curricula are... socially constructed. They are designed by adults with particular beliefs about what constitutes appropriate activities for children at a particular moment in history. The beliefs of these adults emanate from the dominant values of the culture and society […] within which they live and work. (Anning and Edwards 1999: 80)

These writers consider that the 'what, who and how' of learning are the significant components of a curriculum for the under fives.

There are considerable differences of opinion to be found amongst those involved in early childhood education and there is an ongoing debate about the ways in which official documentation is interpreted in different settings to provide learning opportunities for children that are appropriate to their age and development. The place of ICT within these is rarely considered; this may or may not be advantageous to its use in supporting learning. We have at present what Rogers (1999) describes as a fragile consensus between those who advocate prioritising 'basics' such as literacy and mathematics as preparation for later learning and others who fear that this approach will actually impede and limit progress and only be achieved at the expense of the more affective and collaborative aspects of development. Ideology and empirical evidence do not sit too well together here. The formalisation of play to accommodate pre-designated learning outcomes is not always welcomed but inspection evidence suggests certain children make most progress in highly structured environments. The 'what' and 'how' of the curriculum are central concerns of the consensual view. Documentary interpretation is important and is closely linked to issues of equality of opportunity and provision.

The discourse of the documents is influential in defining that which is judged to be appropriate knowledge and the ways in which it is to be construed. Without doubt they set out to 'shape practice.' Unsurprisingly, given the variations seen so far, what each has to say about computer technologies and ICT differs. The English document, the most recent, has the greatest number of references to ICT; the others offer general advice premised on the presence in children's lives of technology and a recognition that knowledge and understanding of the world should encompass this area.

4 Historic Change

In the last decade or so, change in the UK's education systems has been primarily directed at the statutory phases of schooling but has had a corresponding influence on the educational experiences of the youngest children. Changes in England can be tracked through some of the reports published by government and other agencies from the period of the Education Reform Act (1987). This introduced for the first time a written curriculum into English Primary schools. This innovation was supported by legislations and by an assessment and testing framework as well as regime of inspection.

These events rapidly affected those early years' pupils within the school systems; changes for the non statutory phase developed a little more slowly but nevertheless followed a similar trajectory. Variations can be found in the different countries in terms of policies on school admission; these impact on the 'experienced curriculum' of the children. For example, school start age in Northern Ireland is 4 but in England it is 5; however in England very large numbers of 4 year olds are in school. Change in curriculum documentation seems set to continue as a feature of early years work as references later to 'consultation' indicate.

5 Reflections on Documentation Differences

This study looks at official documentation and guidance from other sources (e.g. Local Education Authority sites, BECTA) and will include a consideration of the views of a small sample of teachers. It considers the relative influences on practice involving ICT and learning. An initial step was to outline the documentary variation in each of the four countries, England, Scotland, Northern Ireland and Wales. Here it was possible to see differences in the discourses which it could be argued reflect official perceptions of children in this age band. This first look at a range of documentation indicates different ways of describing the target groups. For example, that published by the Scottish Consultative Council indicates its relevance '… for children 3 to 5.' A second, from the Curriculum and Qualifications Authority (England) is directed at '… the Foundation Stage,' while that from the Qualifications, Curriculum and Assessment Authority for Wales is for '… learning before Compulsory school age.' Finally, from the Northern Ireland Council for the Curriculum, Examinations and Assessment we have the term '… for Pre-school Education.' Even descriptors of this part of the early years phase are, it seems, not uniform. The use of the term pre-school is held by many to encourage the view that this stage is a preparation for later.

As Dahlberg, Moss and Pence (2000) remind us, the discourses we use signify; they are important instruments to transmit power; they influence the way we look at the world. Language is used to shape policies, practices and relationships, to shape our understanding of what is possible or desirable, to construct the child and to understand children

> Discourses are not just linguistic but are expressed and produced in our actions and practices, as well as the environments we create.
>
> (Dahlberg *et al.* 2000:31)

Already we have a number of terms used to describe the children, and a hint maybe that there might be some differences in the ideological beliefs underpinning the advisory documentation of the four countries.

Documents like these are subject to continual review and at the time of writing the relevant item for Wales is currently out for consultation. It is likely that this process, representing as it does evolution over time, will include some change to specific ICT references. This is particularly true of Scotland where a review of relevant

research evidence has been commissioned in connection with a new national strategy for the provision and use of ICT in pre-school education (Stephen and Plowman 2002). Scotland has also announced that '… around 60 colourful computer centres would be set up in nurseries in the coming year.' This is part of the IBM KidSmart partnership initiative targeted at disadvantaged areas which as the Scottish Minister says aims to '… develop the skills of the future, […] help us bridge the digital divide and give very young children a bright, stimulating, imaginative way to learn.' There are currently 300 such installations in the UK. A future orientation here but also an important equity issue in that the initiative aims to provide access for groups who might not otherwise readily have it.

The titles of the key documents are not entirely convincing in suggesting they are to be constituted as 'curricula'; in fact they seem explicitly to avoid this view. Those for England and Northern Ireland use in their titles 'Curriculum Guidance,' or 'Curricular Guidance.' The current Welsh document uses the term 'Desirable Outcomes for Children's learning' the current Scottish one is entitled 'Curriculum Framework.' Is it possible then to look upon documents describing themselves in these ways as examples of official curricula which admittedly acknowledge that the entirety of the experienced curriculum extends further? Anecdotal comment in professional texts suggests that in England at least this is the perception. Comment here indicates too that the Foundation Stage has been warmly welcomed by practitioners as it offers them support against the downward pressure of the National curriculum. (EYCG Action paper No. 3 2002). The goals of the Foundation stage have recently been given statutory status, again a change seen as positive as it implies equity of status for this phase in relation to the Key stages within the National Curriculum structure. These views suggest acceptance of both 'subject like' orientation of curriculum demands and the feeling of 'preparation for a later stage,' both unsupportive of Papert's view.

6 ICT, Innovation and Professional Development

Curriculum change and recent initiatives have provided the substance of much recent professional training and 'institutional' demands have dominated. Scotland has given continuing professional development (CPD) the most serious attention with the implementation of the Mc Crone report (which also affects teacher's conditions of service). The Welsh Assembly has removed the Key Stage 1 Standard Assessment Tasks (SATs) that is the formal testing of seven year olds, and in so doing recognised the value of teacher assessments at this point and relieved the pressure on the curriculum that such testing produces. Its current discussion document asks if a Foundation Stage for pupils of three to seven years should replace the existing division between early years and Key stage 1. In England training for first the National Literacy and Numeracy Strategies and now for Foundation stage has dominated in-service agendas. Differences at policy level affect the daily lives of teachers and children and reflect differing national concerns. One thing that has been widespread across each country has been the implementation of a massive programme of Continuing Professional Development designed to bring serving teachers' expertise in the use of ICT up to a level comparable to that of their newly qualified colleagues (for details see Leask 2002). Policy makers see this updating of the profession as a way of supporting the preparation of young people to take their place in the world. This future orientated view is used here as justification for teacher training in the pedagogical application of ICT within specified outcomes.

7 Training and Terminology

The use of the term ICT is increasingly recognised as masking some ambiguities. For example, it can be used to describe a specific set of skills or to emphasise the communication or information elements of the technological devices. Leask (2002) expands this point noting that

> A wide variety of forms of technology is included within the term ICT. Each of these forms of technology has the potential of being used in quite specific ways in different educational contexts with children of different abilities, ages and educational needs as well as with teachers, school librarians, parents and others.
>
> (Leask 2002:3)

She is of course commenting on the recent UK training initiative, but the point is well made that the term ICT is used loosely and not always consistently even in professional discussion.

Her report also reveals that teachers' experiences of this training were very varied and reminds us that the opportunity was only available to teachers and not to others involved in work with children. Although beyond the scope of this study, the appropriate training of all practitioners involved in working with young children in the use of ICT in support of learning is an important issue. The teachers asked for comments here would have been part of this training initiative. The focus of the discussion with them was primarily on computer use rather than technology in any broader sense and questions prioritised ICT as a tool to support learning rather than surveying IT skills development.

So against this background of political will and policy for change, the emergence of statutory goals, the availability of written curriculum documentation and extensive CPD work relating to ICT, this study sets out to consider teachers' views about planning in line with guidance, their beliefs about young children's learning and the practices surrounding the use of ICT within the curriculum. The teachers' views and document materials are seen here as representing the 'what,' 'who' and the 'how' of curriculum. Their views should also indicate something of the 'what' of the curriculum in terms of the priority accorded 'schoolish' things or new forms of learning appropriate for young children.

8 ICT and the Curriculum Documents

Each of the four countries' guidance documents was examined for references to ICT in any section, but particularly those relating to dimensions of learning. With the exception of the current English one, such mentions are few and far between. References, when they occur do so in general terms, '… how to use a map, a tool or a computer program', or as part of a list, '… teach and encourage use of ICT in the settings, for example, tape recorder and headphones, programmable toys …. ,' *(Knowledge and Understanding of the World*: 86/93 Foundation Stage). They may occur obliquely as in the Scottish document which has an image of child at a computer but only two other references, both within lists. The Welsh document simply acknowledges that by the age of fice children's experiences will have helped them understand a variety of information sources, one of which is 'information technology.' The English document does include references to computers in imaginative play settings and the use of paint programs and to children showing each other how to use equipment. These applications might be more exploratory and less orientated to 'learning goals.'

Knowledge and Understanding of the World, and its equivalents in other countries, is primarily about raising awareness of the technology found in the child's world (washing machines, burglar alarms, timers, barcode scanners) but there is also a certain tension here between this broad view of technologies and those whose functionality is primarily about *information* and *communication*. There is also some ambiguity about learning to use computers and using computers to learn. The additional guidance for Early Years CPD training is much more specific. It includes:

> d. use ICT to support the development of language and literacy, through the use of programs which develop reading and writing, e.g. to reinforce letter/sound correspondence, and encourage pupils to engage with stories, songs and rhymes presented on the screen, as well as through the use of high quality educational broadcasts;
>
> e. use ICT to support the development of numeracy through the use of computer programs and robots which develop the use of mathematical language, and the recognition and exploration of numbers, simple mental operations and patterns.
>
> (Annex 1 TTA 1998c:26)

Some rather 'schoolish' things here, possibly representing that aspect of the 'fragile consensus' which prioritises 'basic skills.'

9 Advisory Site Suggestions

Leading a teacher discussion forum, as I do as a moderator, it is easy to see that information is exchanged about 'useful sites' for new ideas for classroom use. The vastness of suggestions makes any comprehensive overview impossible, but looking at two National and two local sites popular with teachers suggests the areas they find interesting. Different approaches are adopted by these sites. There are teacher authored case studies on one while another takes a lesson plan approach. These plans come complete with learning outcomes, linked work, assessment strategies and other details. There is discussion on phase issues in general as well as the place of ICT within this. One English site takes the stepping stones of the Foundation stage as its starting point and links this to activities, ICT resources and the early learning goals, reflecting very closely the language of the curriculum and the emphasis on goals measuring progressive attainment.

The ambiguities already noted are also apparent in the national guidance suggestions. A high proportion of the suggestions match closely the idea of taking successful activities and practices and adapting them to accommodate e-resources, for example, using digital cameras in book making, creating pictures with paint programs, story sharing with e-books. Some of the examples have clearly enthused children, parents and staff but on the whole they do not seem to exploit the full power of multi-media available. Only one outlines the creation of an electronic book with and for the children and their families. There is one example of an interactive whiteboard and projector being used on-line with the children. Here the direct connect with the screen, the magic finger, was seen as being hugely motivational, especially for text manipulation activities. Apart from the latter two examples, most of the others would fit McCormick and Scrimshaw's view of ICT being used to support effective levels of pedagogy. They do not seem to exemplify 'new forms of learning'. Looking at these sites there is again some lack of clarity. For example, it is not clear if ICT resources used in imaginative play are 'pretend' or real or whether there would be differences in the nature of learning in one case or the other.

10 Teachers' Statements

A small scale survey was carried out involving teachers in each of the countries, they were asked for information about how they felt computers could support learning in the subject orientated domains, the software, hardware and strategies they used, their approach to planning, beliefs about learning, fears about computers and young children and what they would most like to have in their settings. Informants represented nurseries, a four plus unit, a mixed age Reception and Year 1 class and Primary 1 class. The survey contained closed and open questions.

All teachers had access to a similar range of equipment: all had computers, roamers and printers, some had digital cameras and microscopes and a minority had access to an electronic whiteboard; no one had a scanner. There was broad general agreement that ICT had something to offer in each area of learning although some had reservations about physical and social development: there were some contradictory views across the group here and about the degree of teacher direction or adult support required. Literacy and numeracy use topped the bill for regular or frequent use; with other areas getting less attention. Imaginative play never it seemed involved ICT either real or 'pretend'

except for one teacher who commented that she used the talking stories for role play re-enactments. In response to a question about this another teacher commented 'now there's an idea, you've really got me thinking.'

In reporting difficulties with planning, responses mainly linked to children's lack of motor skills to use equipment respectfully, the adult intensive nature of support, lack of suitable software in some areas, hardware failure, ensuring children had sufficient but not too much time on the computer, lack of confidence in own skills level and the need from time to time for quick access to technical support. Paradoxically different views were expressed in response to some of these questions and there was an almost equal division between those feeling that computers were excellent for fine motor development, stimulating talk, peer support and the development of independence in learners, and those holding a different view.

The ambiguity about learning how to use a computer that focuses on skills, and using computers to help you learn, was very apparent in teacher comments. When domain learning was mentioned it was frequently about learning to recognize and count number or for phonic practice. The future orientation was also commented on 'ICT is good for the basic groundwork and getting used to the format they will grow up with,, … a necessary skill but sometimes feel we push children too early.' Advantages listed included: motivation; fun; able to produce work not possible without it; gaining confidence in using the computer; good for teaching basic skills; very supportive of oracy; increases concentration spans; good for reinforcing and practising their other learning. The disadvantages mostly related to equipment that was not sufficiently child-proof or child-friendly or to the limited number of computers or space available in the setting. The wish list was mostly about putting these things right and improving subject specific software and quick technical support when equipment failed. Electronic whiteboards for whole class presentations also get a mention. One teacher wished for 'access to an IT suite'. No one expressed any conflict between their beliefs about how children learn and any aspect of the curriculum or the paucity of reference therein to ICT and learning. One teacher light heartedly suggested that this allowed for 'interpretation.' There were a few reservations, mainly about child welfare such as 'the possibility of too much time in front of screens both at home and school' and limited access to safe outdoor play. Ensuring equity of access was another concern.

The teachers were positive or enthusiastic about the place of computers in their classrooms but the picture painted by the comments was very much in line with that suggested in the curriculum and advisory documents. Familiar practices enhanced by ICT and learning focused towards achieving goals in preparation for the next stage. Activities supporting literacy and numeracy seemed to dominate, most of these involving commercially produced software.

11 Discussion

While it is clear from teacher comments that using computer features significantly in their practices and that they see ICT as supporting many aspects of children's learning, it also seems clear that the discourse of the curriculum documents influences their views. Despite the limited role outlined for ICT in the various support documents, the teachers' statements indicate that the requirements of the subject-like dimensions influence practices involving ICT heavily, most specifically in numeracy and literacy and language. Rogers (1999) suggests that the guidance documents prioritise both these areas together with some emphasis on social development. She also suggests that there may be some good reasons for this, most especially to be found in the research evidence relating to children from backgrounds that have been unable to provide the experiences that are so vital to early development and learning. Such children are felt not to be best served by unfocused activities or poorly thought through notions of 'play.' Meadows (1993) commented that almost anything that a child did might, in some circumstances, be described as play. Some of the stated aims of each government's initiatives in this phase are to improve the life chances of children in disadvantaged circumstances and to improve the quality of planning and provision across the range of settings caring for young children to provide a sure start for every child.

In the various data sources used here there was an emphasis on providing enjoyable and engaging activities leading to clearly identified goals but in a controlled rather than an open and exploratory child initiated way. Although there are differences in the tone and specificity of the various documents there was remarkably little difference in teachers' reports of their practice or of their outlines of the planning process. Everyone described a process that started with a long term view where attention was given to the various learning areas and, where these applied, to the learning goals. This was refined to accommodate seasonal or local events or topics and themes with final adjustments being made on a weekly basis to take account of more individual children's needs. Planning for ICT was accommodated within this mostly where opportunities were seen to exist. Apart from literacy and numeracy activities these largely seemed to be influenced by the availability of software or the need to ensure IT skills were developed. Planning for skills development got consistently high ratings while creative development featured less strongly.

There is currently debate in the UK at all levels about the marginalisation of the more affective elements of learning and interest in creativity in the broadest sense is re-emerging. There are many who feel that the emphasis on literacy, numeracy and measurable learning gains within the curriculum guidance has been at the expense of more holistic education. Since exploring representation in all its forms is such an important strand of sense and meaning making, any narrowing of the curriculum here would seem disadvantageous to children. Closely allied with this view of the importance

of symbolic understanding is a belief that there is an important place in learning for exploration, risk taking and self direction. Useful and informative feedback happens when things don't turn out as we expect as long as we do not see it as 'failure' but merely the justification to try another idea. ICT and computers seem to have potential to be very supportive of this type of learning by facilitating exploration of representation including those created in imaginative play. Although a familiar view amongst early childhood educators, it is rather closer to Papert's idea of those 'new forms' best suited to the nature of the young child. Powerful arguments are put forward by each side about the most appropriate curriculum for young children.

McCormick and Scrimshaw (2001) have two further levels to describe the change that ICT can make to pedagogy as well as that of 'increased efficiency' which can be so readily found in professional accounts. At a more significant level they speak of situations where ICT 'extends practice.' Here the technology makes it possible to take learning further than would be possible otherwise. The multi-media book making could be seen as representing this level.

At a 'transformative' level ICT changes the nature of what is possible either in the learning domain or by helping the learner to do something that would not be possible in any other way. This level seems closer to Papert's 'new form' but is not so readily seen. To achieve this type of usage teachers need to be able to themselves experiment with the technologies, and to have access to the technical backup that will give them confidence that they do not have to have alternative plans ready just in case the equipment fails. Leask raises the important issue for teachers of finding out about what is available and then having the time to explore and exploit the technology within their pedagogy. This point was also made by some of the teachers. One said, 'as fast as I feel really on top on using what I have I hear about something else that I really want to find out about,' while another said that really being able to try things out fully to avoid wasteful purchases was so important but very hard to fit into a packed schedule. A Mr or Ms Fix-it, readily available when needed, appeared on more than one wish list.

12 Conclusion

The question of how best to use computers to support learning has been set here within a wider controversy about the nature of the most appropriate curriculum for young children. This in turn is embedded within a more political framework about the influence on practice of the discourse of official guidance documents and educational initiatives. Any anxiety felt by commentators and researchers about the suitability of having written more centralised curriculum guidance expressed in terms of areas of learning was not shared by the teachers, at least not in terms of their informally stated opinions. Neither was there any suggestion of a conflict between their views about how young children learn best and the ways in which it was possible for them to use computers to support learning. All of the teachers commented that they felt that literacy and language, numeracy and mathematics activities were all well supported by ICT and that a significant advantage of using computers was that gained by making a positive start on letter and number recognition, phonics, counting, matching and supported reading. They recognised the 'holding power' of the computer for some but not all children but were wary of overexploiting it especially when this would mean some lessening of the place of hands-on multi-sensory experiences.

The activities they described were consistent with emphasis in the curriculum guidance although they were less varied than those outlined on the advisory sites. Almost always these activities used ICT to replicate other practices and these were very much in line with the competences outlined in the Teacher Training requirements.

The data considered here, although only drawn from a very narrow sample of what could be available, supports the points made by Dahlberg *et al*. (1999), Anning and Edwards (1999), and Burton (2002) that curriculum discourse has a powerful influence on what is valued within learning, on the activities judged to be appropriate and on the dominance at any specific point in time of the cultural values of particular groups. The 'what' and 'how' of computer use shown in this sample seems very much in line with curriculum advice. What was a little surprising here was that there was little to support country specific differences despite the variation in the advisory documents.

This account has used teacher comment to establish a picture, limited though it might be, of the current usage of computers and a range of peripherals in the sample settings. It did not attempt to engage teachers in any wider debates about curriculum or policy or take account of the different circumstances of any setting other than its country specific location. The teachers who responded indicated interest in finding out more about the views and practices of colleagues working in this phase in other countries concerning what was worthwhile and valuable in using ICT to support learning.

Making a judgement about the 'schoolish' or otherwise nature of activities exemplified in the documents or on support sites or suggested by individual comment would seem to be dependent on one's position within the continuum of views that constitute the debate about the most appropriate type of curriculum. While I applaud the aspiration of government and policy makers to improve the learning opportunities made available to any child, especially one suffering disadvantage, I am not convinced that the present models best represent the ideal balance between the cognitive and more creative and affective aspects of learning. However, I do not have any statutory obligations to work with the dimensions of learning on an everyday basis. We have not, I think, yet reached the point at which we are opening up the new forms of learning that the powerful new technologies make possible and which permit young children to experiment with letters, numbers,

images, sounds, shape, colour, line form or any other representational tool they might encounter in their present multi-media world.

A final thought:

> *… the wider the range of possibilities we offer children, the more intense will be their motivation and the richer their experiences… All people end by discovering the surprising and extra ordinary strengths and capabilities of children linked with their inexhaustible need for expression …* (italics added)
>
> (Malaguzzi 1993b:2–73)

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