

# Getting it Right From the Start: A Case Study of the Development of a Foundation Stage Learning and ICT Strategy in Northamptonshire, UK

Rachel Ager and Mike Kendall

Northamptonshire County Council Education Service  
NIAS Spencer Centre, Lewis Road,  
Northampton NN5 7BJ, England

rager@northamptonshire.gov.uk

mkendall@northamptonshire.gov.uk

## Abstract

This paper describes the development of an exciting initiative involving a programme of investment and learning in the effective use of ICT in the teaching and learning of all Foundation Stage (three to five year old) children in Northamptonshire, UK. The project is currently in the second year of a major five year programme which will involve over 15,000 children in over 660 educational settings. The project began in 2001 with a £100,000 investment in Northamptonshire's nine Nursery Schools and involved 700 pupils aged three to four years. It provided them with an appropriate range of learning and ICT suitable to their development and curriculum needs, and a training programme for the staff. Evaluation of the new ICT provision indicated that it had a positive impact on the children's learning. This ensured the continuation of the project into its second year and a further investment of £200,000 in the county's thirty-nine maintained nursery classes. Evaluation at the end of year two supported and added to the finding that the new ICT provision had a positive impact on childrens' learning.

The next stage of the project is the development of a Foundation Stage ICT Strategy, which will involve all children between the ages of three and five years, in the county's 240 primary schools, led by the nine Nursery schools and backed by a budget commitment of £1.5m in the period 2003–2006. The initiative will establish an entitlement of ICT provision for all Foundation Stage children in the county providing for a coherent range of provision which will encompass both public and private educational settings and a strong base for increased levels of attainment and progression for all.

*Keywords:* early Childhood education, learning environments, equity, curriculum, standards.

## 1 Year One — Northamptonshire Nursery Schools

### 1.1 Introduction

Until 2000 the provision of ICT for the youngest children and staff in Northamptonshire's schools, including its nine Nursery Schools was, as it was in many other counties, very patchy and of a low quality. The computers were often old and there was a lack of appropriate software and input devices. The training available for the teachers, nursery nurses and learning support assistants who educated these children was inadequate. There was limited understanding of the curriculum to be developed and delivered, and of the numerous benefits ICT could offer. Guidance on the curriculum to be delivered is set out in Curriculum Guidance for the Foundation Stage (QCA 2000). The Foundation Stage of a child's education starts when they reach the age of three and ends with the Reception Year (the academic year in which they celebrate their fifth birthday). The curriculum has an explicit ICT element and an understanding that ICT should be used to support learning across the whole curriculum.

Northamptonshire's nine Nursery Schools are standalone LEA maintained schools with a combined population of 700 pupils. Children join the Nurseries in the September before their fourth birthday and the majority of children attend part-time, having either a morning or afternoon place. They attend the Nursery for one academic year before moving on to a Reception class in a local primary school. The Nurseries are all staffed by teachers, nursery nurses and learning support assistants and are each led by a Headteacher. Prior to the project the Nurseries had very poor ICT provision. The 'best' resourced Nursery had a computer to pupil ratio of 1:15 and the most poorly resourced nursery had a computer to pupil ratio of 1:30. All the Nursery Schools fell well short of the government-set target for primary schools at that time of 1:11. The staff were often wary of new technology and although they accepted that there was now a place for computers in their Nurseries they were unconvinced of the potential learning gains they offered young children.

The aim of the project was to create a challenging and appropriate learning provision in which all children and staff competently and confidently use ICT to enhance learning. It aimed to establish an entitlement model for

each child within all the nine Nursery Schools. Brooker and Siraj-Blatchford (2002) conclude ‘that despite the fact that the majority of parents believe that computers are important and that children should have early access to them there remains considerable inequality of access to ICT in the home.’ They suggest that there is a ‘possibility that a ...disadvantage might be created on entry to school’ with a ‘lack of home experience of computers.’ If all children in the Nursery Schools had access to a high quality ICT provision for the year before they started school it was hoped to reduce this potential disadvantage.

## 1.2 The Project plan

The British Educational Computer Technology Agency guidelines available at the time suggested that computers for young children should be provided with a variety of input options and a variety of mostly CD-ROM based software. The first year of the project involved an investment of £100,000. Each Nursery School received four curriculum computers. Input options included touch screens, standard mice, small mice, switches, standard keyboards and a large-key keyboard. Software was mostly CD ROM based and included *Tizzy’s Toybox*, (Sherston Software), *Nursery Rhyme Time*, (Sherston), *Teddy Games*, (LäraMera Program AB) and *Leaps and Bounds*, (Granada Learning). Software was selected to support learning across all six Areas of Learning as defined by Curriculum Guidance for the Foundation Stage QCA (2000). Each Nursery received a programmable toy, a digital camera and a printer.

The teachers, nursery nurses and learning support assistants at the nurseries were to receive training on the management and operation of the hardware and software and on the delivery of the curriculum. A technician was assigned to the nurseries to provide any technical support they required on a call out basis. The provision of a technician for use by the Nurseries removed the possibility that the use of the computers might be restricted by the inability of the staff to rectify minor software and hardware issues.

The use of the computers by the children was then planned by the teachers at each Nursery within the context of their usual curriculum planning framework for a period of six months.

## 1.3 The Impact on Learning

After six months a total of twenty teachers at the nine Nursery Schools, completed a questionnaire to assess the impact of the new provision on the children’s learning within each of the six Areas of Learning, QCA (2000). The teachers within each Nursery made a collective response acting as a critical reflective practitioner group to assess whether the use of the computers had a positive impact on learning on the children in their Nursery School. Though the project team were sure in their own minds as to the educational benefits of the new provision, there was a relatively small body of evidence at this time on the effects of the use of computers on the learning of children aged three and four. Studies had mainly focused on school-aged children (the over five’s).

The responses from each Nursery are set out below by Area of Learning, QCA (2000):

### 1.3.1 Personal, Social and Emotional Development

‘This area of learning is about emotional well-being, knowing who you are and where you fit in and feeling good about yourself. It is also about developing respect for others, social competence and a positive disposition to learn,’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 6                   |
| Positive for the more developed child | 2                   |
| No impact                             | 0                   |
| No evidence                           | 1                   |

**Table 1: Impact on Personal Social and Emotional Development**

### 1.3.2 Communication, Language and Literacy

‘Communication, language and literacy depend on the learning and being competent in a number of key skills, together with having the confidence, opportunity, encouragement, support and disposition to use them. This area of learning includes communication, speaking and listening in different situations and for different purposes, being read a wide range of books and reading simple texts and writing for a variety of purposes,’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 8                   |
| Positive for the more developed child | 1                   |
| No impact                             | 0                   |
| No evidence                           | 0                   |

**Table 2: Impact on Communication, Language and Literacy**

### 1.3.3 Mathematical Development

‘This area of learning includes counting, sorting, matching, seeking patterns, making connections, recognising relationships and working with numbers, shapes space and measures,’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 6                   |
| Positive for the more developed child | 2                   |
| No impact                             | 0                   |
| No evidence                           | 1                   |

**Table 3: Impact on Mathematical Development**

### 1.3.4 Knowledge and Understanding of the World

‘In this area of learning, children are developing the crucial knowledge skills and understanding that help them make sense of their world. This forms the foundation for later work in science, design and technology, history, geography, and information and communication technology (ICT),’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 9                   |
| Positive for the more developed child | 0                   |
| No impact                             | 0                   |
| No evidence                           | 0                   |

**Table 4: Impact on Knowledge and Understanding of the World**

### 1.3.5 Physical Development

‘Physical development in the foundation stage is about improving skills of co-ordination, control, manipulation and movement,’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 7                   |
| Positive for the more developed child | 1                   |
| No impact                             | 1                   |
| No evidence                           | 0                   |

**Table 5: Impact on Physical Development**

### 1.3.6 Creative Development

‘Creativity is fundamental to successful learning. Being creative enables children to make connections between one area of learning and another and so extend their understanding. This area of learning includes art, music, dance, role play and imaginative play,’ QCA (2000).

| Response                              | Number of Nurseries |
|---------------------------------------|---------------------|
| Positive for all children             | 5                   |
| Positive for the more developed child | 0                   |
| No impact                             | 4                   |
| No evidence                           | 0                   |

**Table 6: Impact on Creative Development**

These results show that the new provision had a positive impact on the learning of the children in the Nurseries across all six Areas of Learning. The Nurseries reported that the use of the computers promoted positive attitudes to learning and that it was often a highly social activity that encouraged the children to work together, take turns and share fairly.

It should be noted that the use of the computers was planned into the Nurseries usual planning framework and they were not made the focus of an adult-led activity any

more often than would have been expected within this framework. It should also be noted that at this time not all the Nurseries had received curriculum training and the results reported were not those expected by staff who just six months earlier had been unconvinced of the teaching and learning opportunities afforded by ICT.

## 1.4 The impact of Input Devices

The teachers at the Nurseries assessed the impact of the input devices used by the children. These responses would help shape the form of any future provision offered to other nursery classes.

### 1.4.1 Touch Screens

The BECTA guidelines had suggested that children should be offered a variety of input devices as the need for mouse control can act as a barrier to accessing a computer. Accurate mouse control has to be developed and this can take time. The children should be able to access the programmes on the computers sooner if the barrier that mouse control presents is removed. The Nurseries were provided with touch screens on two of the four computers.

The response to the impact of the touch screens was not the one that had been predicted. The nurseries reported a mixed reaction to the touch screens with only one nursery reporting a positive impact for all the children. The responses suggested a consensus across the Nurseries that most children ultimately progress faster if they don’t use a touch screen but spend time learning mouse control. Any short term benefits of using a touch screen were outweighed by the long term gain of developing sound mouse control. Limiting the use of touch screens delays progress initially but the children develop mouse control faster.

The Nurseries reported that the children often found the touch screens frustrating as other children could unwittingly interfere in the operation of the software if they touched the screen whilst discussing what was happening. Five of the nurseries reported that use of the touch screens had a positive impact on the learning of children who found mouse control very difficult or impossible because of poor hand-eye coordination and that it was an excellent introduction for those children who had little or no previous experience of using a computer. Where the touch screens were used under the one-to-one supervision of an adult within the two special provisions for hearing impaired children a positive impact on learning was reported. The touch screen allowed the adult and child to focus on the computer programme with either adult or child having the opportunity to use the input device at anytime. The child’s operation of the software was not impeded by the need for accurate mouse control.

### 1.4.2 Interactive Whiteboard

One of the Nurseries used an interactive whiteboard. They reported that it had been very successfully integrated into the learning provision in the Nursery and that it had a positive impact on all the children’s learning.

The children could access all programmes without the need for mouse control. The children were more likely to 'draw' pictures using the programme *2Paint*, (*2Simple*) on the interactive whiteboard than on the computers with a mouse. The children accessing the whiteboard in this way developed their gross motor control. The children found the size of the display very motivating and it encouraged increased collaboration between the children. It also enabled the programmes to be the focus of adult-led group activities. A child with a hearing impairment used the whiteboard and the size of the display appeared to encourage him to use it rather than the other computers. The Nursery reported that the board was operated by finger as opposed to pen and that as with the touch screens children could unwittingly interfere in the operation of the software by touching the board.

### 1.4.3 'Tiny' Mice

'Tiny' mice (Inclusive Technology) were provided on two of the computers. A 'tiny' mouse is approximately half the size of a standard mouse. Standard mice are designed to fit an adult hand and are too large for the hands of young children. The mouse often moves as a young child's outstretched finger attempts to click the mouse button or they may resort to moving the mouse with one hand whilst clicking the mouse button with a finger on the other hand. This is particularly true for those children who are in the earlier stages of developing mouse control.

The response to the impact on learning of 'tiny' mice was consistently positive. Four nurseries reported that the use of 'tiny' mice had a positive impact on the learning of all the children whilst five nurseries reported that the use of the 'tiny' mice had a positive impact on the learning of those children who were in the earlier stages of developing mouse control. All the nurseries reported that these mice were easier for the children to use than a standard sized mouse, fitting well into their small hands, setting them up for success whilst learning mouse control and reducing the possibility of frustration and failure. The only concern expressed by the teachers was that the mouse balls in the 'tiny' mice required cleaning significantly more frequently than standard mice. One Nursery reporting that they had come to accept that the 'tiny' mice were a disposable commodity and budgeted to replace them on a regular basis.

### 1.4.4 Switches

One Nursery used a set of AbleNet switches with the programme *SwitchIt! Diggers*, (Inclusive Technology). They reported that the children found the programme motivating and the use of the switches increased the speed with which children with no prior experience of a computer understood that they could control a computer. Their use raised the self-esteem of children with poor mouse control as their use eliminated the frustration of attempting to access programmes using the mouse. When two children had control of a switch each they developed an understanding for the need to take turns when operating the programme.

## 2 Year Two — Northamptonshire's Nursery Classes

### 2.1 The Rationale

All nine Nurseries reported that the use of the computers promoted a positive attitude to learning. Goleman (1996) and others suggest that the phase from birth to six years old is a critically important phase for establishing learning attitudes. Goleman describes it as a "window of opportunity." These positive attitudes are important; this "window of opportunity" is open to the Nursery School children. Donaldson, Grieve and Pratt (1983) recognise the impact that early learning experiences have on later achievement. They state that "early childhood is a period of momentous significance ... By the time this period is over, children have formed conceptions of themselves as social beings, as thinkers, and as language users, and will have reached certain important decisions about their own abilities and their own worth. This places a very special responsibility on those involved in the teaching of young children during this period, either at preschool or school." Taking this belief, the positive attitudes the children are developing whilst using the computers will shape decisions the children ultimately reach about their abilities and worth. National reports (National Commission 1993, Ball 1994) have pointed towards the importance of positive attributes towards early learning in improving life long achievement. The new provision through fostering positive attitudes to learning has the potential to improve life long learning for all children.

The evaluation of the new ICT provision indicated that it had a positive impact on the children's learning and on the children's attitudes to learning and this ensured the continuation of the project into its second year. In its second year the project would focus on the county's thirty-nine nursery classes each of which forms part of an LEA maintained primary school. The children in the nursery classes, as in the Nursery Schools, join them in the September before their fourth birthday with the majority of children having a part-time placement (either morning or afternoon). They attend the nursery class for one academic year before moving on to a Reception class usually within the same school. If computers were not provided for the nursery classes then these children would have access to a significantly different learning provision and curriculum than children of the same age in the county's nine Nursery Schools and put them at a potential disadvantage.

Though the primary schools had received funding for ICT equipment and many had achieved the government set target for computer to pupil ratios, the computers were often sited in computer suites. Computer suites whilst appropriate for use by older children do not provide young children with an appropriate learning environment or provide for an appropriate model of curriculum delivery. Little (1995) acknowledges "the problem of a downward extension of primary schools into kindergartens and nurseries" noting that teachers may be pressured into "presenting nursery and reception children with a more structured and inappropriate version of the curriculum, ...taking little note of individual differences

and rates of growth and development.” The children in the nursery classes must have access to a developmentally appropriate curriculum. Their computers need to be sited within their normal learning environment and not in a computer suite. If there were computers within the nursery classes they were often old. Traditionally the deployment of ICT resources in primary schools being dominated by the 'best' and newest computers being targeted at the oldest children. These old computers were often unable to run software that was appropriate for young children and were prone to 'crash.'

The Nursery School with an Interactive Whiteboard reported a very positive impact on the children’s learning, and their use within a nursery required further investigation. There is a particular need to investigate whether the type operated with a pen would allow other children to touch the board whilst discussing progress without affecting the operation of the software.

## 2.2 The Project Plan

The second year saw a further investment by the County Council of £200,000 in the project. Each nursery class received two computers, with a range of appropriate software, which were to be sited within the classes. The range of software was selected after consultation with the Nursery Schools. Optical 'tiny' mice were provided for both computers, a set of switches for one and a large-key keyboard for the other. Trolleys were provided which were at an appropriate height. A printer was also provided for each nursery class. The eight Nursery Schools without an Interactive board received a pen operated Interactive Whiteboard. A training programme covering the general delivery of the curriculum as well as the use of specific pieces software was offered to the practitioners (staff, nursery nurses and learning support assistants) in the nursery classes. “The extent to which teachers are given time and access to pertinent training to use computers to support learning plays a major role in determining whether or not technology has a positive impact on achievement.” (Valdez, McNabb, Foertsch, Anderson, Hawkes and Raack 1999.)

## 2.3 The impact on Learning

Over the six months the practitioners were tasked to make guided observations, based on a shared methodology, on the impact the new computers had on the children’s learning. At the end of this period the practitioners were asked to assess the overall impact of the new provision adding any important points they had noted during their observations of the children. Fifty-four practitioner reports were completed.

There was a very strong consensus that the quality of the computers was of importance and particularly to those children who had not previously shown an interest in using a computer. In a response that was typical, the children in one nursery class started referring to the old computer as the 'silly computer' once they had started using the new computers. The old computer was not powerful enough to run appropriate software and was frustrating to use as it often didn't work as it should. The

optical 'tiny' mice eliminated the need for frequent cleaning and removed the need to use a mouse mat and the constraints that imposes. The importance of having more than one computer was emphasised. Children put off by a group of children around one computer were much more to likely gain access if there was more than one computer. The appropriate height of the computer trolleys also encouraged those children would have previously shown little interest in accessing the computer. With more than one computer the teachers could offer more opportunities for differentiation either within a programme or by offering the opportunity for the children to access more than one programme at a time. They could target the needs of more children and provide more opportunities for success.

### 2.3.1 Personal, Social and Emotional Development

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 40                      |
| Positive for the more developed child | 12                      |
| No impact                             | 0                       |
| No evidence                           | 2                       |

**Table 7: Impact on Personal, Social and Emotional Development**

Forty practitioners out of the fifty-four reported a positive impact on the personal, social and emotional development of all the children. Twelve reported a positive impact on the more socially developed children whilst two practitioners did not feel they had gathered sufficient evidence to comment. The practitioners reported that use of the computers raised self-esteem in a variety of ways. They reported the differentiation offered by the software increased confidence, that the use of the switches gave confidence to those with limited experience of using a computer or with poor mouse control and that use of the computers gave confidence to children who lacked communication skills including those for whom English was their second language.

The practitioners reported that the use of the computers was almost always a highly social activity and that whilst using the computers the children were more likely to take turns, show each other what to do and help each other. They reported that those with better mouse control would operate the mouse for those with poorer mouse control and the computer offered a focus around which children would interact. This interaction was often between children who did not usually interact with each other.

### 2.3.2 Communication, Language and Literacy

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 54                      |
| Positive for the more developed child | 0                       |
| No impact                             | 0                       |
| No evidence                           | 0                       |

**Table 8: Impact on Communication, Language and Literacy**

All fifty-four practitioners reported that the use of the computers had a positive impact on the development and use of the children's communication, language and literacy. They reported that there was 'a lot of talk' involved in the use of the computers with children telling each other what to do, agreeing what to do, talking to the computer and imitating it. In addition to these more general observations some programmes supported the development of specific language skills. *Tizzy's Toybox*, (Sherston Software) promoted the children's understanding of words that rhyme. The children's ability to match letters to sounds was enhanced by the use of the *ABC-CD*, (Sherston Software). The very visual nature of the programme in combination with the use of sounds enabled children to perform better than expected. Children who did not always respond to the singing of nursery rhymes with any great interest responded to, joined in with and anticipated the nursery rhymes on *Nursery Rhyme Time*, (Sherston Software) with enthusiasm. Children who didn't usually choose to look at books choose to access and respond to 'talking' books. Children's listening skills improved as they listened to and responded to instructions given by the computer.

The computer gave confidence to all, but especially those for whom English is their second language. The visual nature of the programmes gave support and confidence to children with poor language, especially when the children were familiar with the software. The children had a common purpose and a reason for communicating. Brooker and Siraj-Blatchford (2002) reported that 'the use of the computer by the bilingual children...was especially valuable...accessible language forms were being exemplified and supported through visual clues and animations.'

### 2.3.3 Mathematical Development

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 12                      |
| Positive for the more developed child | 42                      |
| No impact                             | 0                       |
| No evidence                           | 0                       |

**Table 9: Impact on Mathematical Development**

Forty-two practitioners reported a positive impact on the Mathematical development of the more developed children whilst twelve reported a positive impact on all the

children. This supports Sarama and Clements (2001) who reported that 'There was some indication, however, that instruction by the teacher was more effective for children just beginning to recognise numerals, but the opposite was true for more able children.' Practitioners also reported that working on the computers reinforced the mathematical concepts that they already understood. This too supports Sarama and Clements (2001) who state that 'Children might best work with such programmes once they have understood the concepts; then, practise may be of real benefit.' Children often undertook mathematical activities on the computer when they would not undertake a practical activity. The computer software allowed for easier differentiation allowing the more developed to go further than might have been anticipated. The computers gave these children the confidence to 'have a go' and the level of talk around the computers helped the children learn to use mathematical language.

The impact of using a computer on the children's Mathematical development would appear to be of a different nature than in the area of communication, language and literacy. Further research would be needed to determine whether this is due to differences in the way the children learn within these to Areas of Learning or whether it was due to differences in the software used or the nature of the children's interactions with the software.

### 2.3.4 Knowledge and Understanding of the World

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 54                      |
| Positive for the more developed child | 0                       |
| No impact                             | 0                       |
| No evidence                           | 0                       |

**Table 10: Impact on Knowledge and Understanding of the World**

The use of the computers themselves forms part of the children's knowledge and understanding of the world and in this the children had improved considerably. However the practitioners felt that the other aspects of this area of learning (Science, Design and Technology, Geography and History) had not been supported well. Though they could see some potential, making it an area for development in terms of their own competencies, they felt it is also an area that needs attention by software companies.

### 2.3.5 Physical Development

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 52                      |
| Positive for the less developed child | 2                       |
| No impact                             | 0                       |
| No evidence                           | 0                       |

**Table 11: Impact on Physical Development**

Fifty-two practitioners reported that the use of the computers had a positive impact on the children's physical development while two report this effect for only the less developed children. Practitioners reported improved hand-eye co-ordination and fine motor control as the children developed mouse control. The 'tiny' mice playing a significant role in the development of mouse control.

One practitioner reported that the children's gross motor control had improved as they had become very adept at moving chairs from elsewhere in the nursery so that they could gather around the computers!

### 2.3.6 Creative Development

| Response                              | Number of Practitioners |
|---------------------------------------|-------------------------|
| Positive for all children             | 33                      |
| Positive for the more developed child | 13                      |
| No impact                             | 0                       |
| No evidence                           | 8                       |

**Table 12: Impact on Creative Development**

In contrast to the early response by the Nursery Schools thirty-three practitioners reported a positive impact on the creative development of all the children and thirteen practitioners reported that the use of the computers had a positive impact on the creative development of the more developed children. Only eight practitioners felt they had insufficient evidence to comment and none of the practitioners reported that there was no impact. This difference is perhaps due to a difference in understanding of 'creativity.' The practitioners in the nursery classes focused closely on creative development as laid down in the Foundation Stage Curriculum Guidance, (QCA 2000) as opposed to creativity as defined just by the ability to produce artwork.

The computers often drew in the boys who were not usually interested in creative activities. Children who did not like 'messy' activities were also more likely to join in. A greater impact was reported on the children's musical development. They enjoyed listening to and responding to music on the computer in combination with visual images. The children were able to explore and construct musical compositions and responded to this music. The visual nature and structured language of some of the activities on the computers, in particular 'talking' books with which they are familiar, act as strong prompts for role play.

## 3 Towards a Foundation Stage ICT Strategy

All nine Nursery Schools reported that the use of the computers had a positive impact on the motivation and level of engagement of most or all of the children and the fifty-four practitioners from the nursery classes reported that use of the computers had a positive impact on the motivation of all the children and on the level of engagement whilst learning. The feedback was overwhelmingly that children using the computers were highly motivated, able to work at a level that suited them

and often progressed further than would have been expected. Pascal, Bertam, Ramsden, Georgeson, Saunders and Mould (1996) suggest that "one of the most predominant characteristics of involvement is motivation" and that "there is evidence ...that an 'involved' child is gaining a deep, motivated, intense and long term learning experience." Using these principals the levels of motivation being reported would suggest that using that the computers provides the children with a deep and long term learning experience. Ball states in his Start Right Report (1994) "The art of learning (learning how to learn) is also concerned with the types, or 'super skills' and attitudes of learning—of which motivation, socialisation and confidence are the most important. These are the fruits of early learning." Increased motivation, socialisation and confidence were all reported indicating the use of computers has a role to play in Ball's 'art of learning (learning how to learn).' Laevers (1993) defines the concept of Involvement as "Characterised by concentration and persistence, a high level of motivation, intense perceptions and experiences of meaning, a strong flow of energy, a high degree of satisfaction, and based on the exploratory drive and development of schemes." He argues further that the level of involvement a child displays is a key indicator of the quality and effectiveness of that learning experience. The levels of involvement shown by the children using the computers would indicate that they are having a quality and effective long term learning experience.

As a result of the positive impact that the use of the new computers was having on the learning of the children firstly in the Nursery Schools and then in the nursery classes it was decided to formulate a strategy that would potentially encompass all Foundation Stage children in the county. Siraj-Blatchford (1995) reported that "services for children under five in the UK are ...characterised by a serious lack of co-ordination, too much diversity and paucity of provision and differences of provision in geographical location." It was intended that the strategy would address some of these issues

The particular need for a strategic plan is supported by the research of Castellani and Tsantis (2001) who suggest that there is a "need for strategic planning and the development of technology competent individuals in charge of teaching and learning." The next stage of the project, backed by a budget commitment of £1.5m in the period 2003–2006, is development of a county Foundation Stage ICT Strategy, which will involve all children between the ages of three and five years, in the county's 240 primary schools and, working in collaboration with the Early Years Development and Childcare Partnership, will endeavour to embrace Foundation Stage children in private settings. This initiative aims to establish an entitlement for all Foundation Stage children in Northamptonshire ensuring that they have access to an appropriate range of learning and ICT suitable to their development and curriculum needs. It aims to establish a coherent range of provision which will encompass both public and private educational settings and which will provide a strong base for increased levels of attainment and progression for all.

Over the last two years belief in the strategy has become firmly embedded in the work of the county's nine Nursery Schools, who boast a growing team of committed staff. They will take the lead to move the strategy forward over the next three years. The priority in the first year will be to establish this entitlement, in each of the nine areas in the county, in two 'leading' Foundation Stage ICT schools which will work with the Nursery Schools and which will become showcases of good practice. Funding will be made available to these schools for the purchase of equipment and training. Working in collaboration with the Nursery Schools the lead schools will then work with and support a cluster of primary schools to establish this entitlement within each of these primary schools. Over the three years this will extend to all primary schools in the county and working in partnership with the Early Years Development and Childcare Partnership give non-maintained settings the opportunity to embrace this entitlement.

Within Pascal and Bertam's Framework for Developing Effectiveness in Early Learning Settings (Pascal *et al.* 1996) the process is measured by two Observation Scales. As indicated above the children would score high on the Child Involvement Scale indicating that they are deeply involved in learning. The second scale is the Adult Engagement Scale which reflects on how adults interact and organise the children in their setting in an area that has not as yet been investigated during the project. Given the belief expressed by Pascal *et al.* (1996) "that the quality of the interactions between the educator and the child is a critical factor in the effectiveness of the learning experience" one of the areas for investigation in the first year of the strategy will be how the adults in the settings can score highly on the Adult Engagement Scale whilst engaging with the children using the computers.

#### 4 Conclusion

The last two years have strengthened the team's belief in the teaching and learning benefits ICT offers to young children. It has borne witness to the effectiveness of this strategy and belief in the strategy has become firmly embedded in the work of the county's nine Nursery Schools, with a growing team of committed staff. It has shown the necessity for a strongly supported strategic framework which covers resources, technical support, professional development and curriculum development.

Young children and their staff have never focused so strongly on the educational benefits of using ICT. We aim to provide a solid based for increased levels of attainment and progression for all. It is an exciting time where we are learning rapidly, building new partnerships, strengthening existing partnerships, and making a difference. "The question of quality in early childhood is crucial and one which we can not afford to get wrong" Bertam and Pascal (1995).

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