

"Are these *really* for us?"

**LAPTOPS FOR TEACHERS OF PUPILS EDUCATED IN OUTWITH
SCHOOL SETTINGS**

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**INTERRUPTED LEARNING: LAPTOPS AND THEIR COMMUNICATIVE
POSSIBILITIES
FINAL REPORT**

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"Are these *really* for us?" Laptops for teachers of pupils educated in outwith school settings.

1. Introduction

The government has treated seriously the introduction of information and communication technology (ICT) into education by channelling significant resources towards improving schools' capabilities in developing the use of ICT within the curriculum. Initiatives such as The National Grid for Learning (NGfL) have helped create the conditions for an ICT revolution in education; schools have been provided with modern machines and improvements have been made in their networking capability within schools, between schools and to the Internet (Stark et al. 2000). The New Opportunities Fund (NOF), has provided training for teachers to enhance their own and their pupils' use of ICT in schools. However, research has illustrated the extravagance of official claims for the NGfL and NOF programmes, which are argued to have "... got off to a slow start, (with) signs that it is now picking up"(SEED 2001 b).

Central to government ICT initiatives is the notion of augmenting and/or transforming conventional teaching and learning processes through the use of ICT, both as a tool for learning and as a subject in its own right (Condie et al. 2002). In addition to the traditional curriculum, all pupils can now expect their teachers to teach them ICT skills as a necessary preparation for full participation in current society.

This report, entitled "'Are these really for us?" Laptops for Teachers and Pupils Educated Outwith School in Scotland', concludes a research process that examined Scottish education authorities' provision of laptops for pupils described as experiencing interrupted learning (Jordan 1999). The research fieldwork, begun in November 2000, was completed in November 2002. It consisted of three phases of data gathering from three main sources:

- representatives from 29 of Scotland's 32 Scottish education authorities,
- representatives from 5 education authority providers of laptops and technological support for pupils, and finally,
- pupils and teachers from outwith school settings.

Phases 1 and 2 of the research were reported in, 'Interrupted learning: laptops and their communicative possibilities' (Padfield and Jordan 2002), which provided a brief overview of Scottish education authorities' policies and practices in relation to provision of laptops.

Padfield and Jordan's earlier research report showed that Scottish education authorities varied widely in their provision of laptops for Scotland's heterogeneous pupil population. During the year 2001-2002, the number of Scottish pupils was officially estimated as 75,221, most of whom participate in education authority provision by attending schools.

In schools, class teachers are expected to support all children's learning and learning support teachers may be available to support the teaching and learning

in classrooms (HMI 1994). In addition, schools can call upon other services should their pupils have additional needs that cannot be met within classrooms or a school's organisation of support for learning. Other services include English as an Additional, 'social, emotional and behavioural' support services, visual and hearing impairment services and teachers of Gypsies and Travellers. A broader notion of an education authority support for learning service is also reflected in its provision of centres outwith school. In addition, national services are available, for example the Call Centre.

Many participants in Phases 1 and 2 of the research reported that laptops were a welcome addition to the many strategies of support that may be available for individual pupils. The term 'laptop' generally referred to a portable computer with the potential of a desktop, but also to those with more limited facilities, for example, an Alphasmart. Importantly, ICT is a term that covers the telecommunications, networks and cabling necessary for full access to the communicative potential of a laptop, provision of which is particularly significant for education taking place in outwith school settings.

Central to participants' reports on provision of the services described above was the view that the government's aims and objectives for social inclusion and raising standards for all pupils are only achievable through good communicative practices between different practitioners and the pupils they serve. Laptops, for example, were described as assigned on the basis of individual pupil need; a process generally set in motion by teachers who refer pupils for assessment. It was evident that laptop allocation was generally negotiated through discussions between a teacher and an education authority's provider of ICT. Thus, good communicative professional networks were necessary for getting effective responses to requests for additional support for learning that may include the provision of a laptop.

Phases 1 and 2 of the research also showed that whilst teachers mainly work in classrooms, some may work both in classrooms and outwith school settings, whilst others work entirely in outwith school settings. Participants' reports suggested that pupils educated in outwith school settings should be well provided with laptops and ICT. However, such pupils, who were typically described as experiencing significant interruptions to their teaching and learning, were also reported as more likely to be considered by some educators, policy makers and local communities as less deserving of laptop provision than were their peers at school, for a variety of reasons.

Data analysis illustrated clearly this point. In every Scottish education authority, as a policy and practice, two pupil populations were not provided with laptops, i.e.

- pupils educated outwith mainstream schools after disciplinary exclusion and/or of being in danger of disciplinary exclusion, and
- Gypsy/Traveller pupils (SEED 2003: 2).

Among the former pupil population, many are frequently 'looked after' by their education authority, for example in Young Peoples Centres (YPC), places that used to be known as 'children's homes'. Although other factors may contribute, many have serious and complex 'social, emotional and behavioural difficulties', which often arise from having learning difficulties. Despite special initiatives, such as financial aid for school discipline to implement the recommendations of

the Discipline Task Group, disciplinary exclusion continues to make the headlines with reports of increased levels of violence in Scottish schools (TESS, January 31: 7. 2003).

Some Gypsy/Traveller pupils attend schools, some are educated partly in schools and partly in on-site portacabins. The provision of an on-site portacabin is one example of some education authorities' attempts to meet their 'duty to provide education' for Gypsy/Traveller pupils. Some Gypsy/Traveller children are taught in their families' trailers, but others remain invisible to the education system and receive no formal education (McKinney 2001). The reasons for these different patterns of education among pupils from Gypsy and Traveller backgrounds are complex. The complexity and richness of Gypsy and Traveller children's cultural heritage and their particular learning experiences are not well known or understood (Jordan 2000).

Many respondents in Phase 1 and 2 perceived children from these two particular backgrounds to have been low down in their education authority's priorities. Across education authorities, the educational experiences of both pupil populations were reported as characterised by significant interrupted learning, which is defined as 'frequent and/or significant interruptions to learning' (SEED, 2003: 4-5). Phase 3 of the research thus chose to assess the impact of education authority laptops on teaching and learning with these two pupil populations, many of whom are educated in outwith school settings.

1.1 *'Outwith school' in Scotland*

The Standards in Scotland's Schools etc Act 2000, defines 'outwith school' in two ways: the first, by reference to Section 14 of this act, "whether out of necessity" which offers three categories; 'prolonged ill health', 'exemption due to illness of family members', and 'other extraordinary circumstances': the second, by drawing upon the Education Scotland Act 1980, Section 30 "or by parental choice" and its category of 'home educated' children. Following the Standards in Scotland's Schools etc. Act 2000, "education authorities must make special arrangements for the education of children who are unable to attend school because of prolonged ill-health and exemptions caused by family illness. They may also make special arrangements for children who cannot attend because of extraordinary circumstances." (Scottish Executive Statistical Bulletins, 28 November 2002).

Researchers have long recognised that the actual numbers of children not attending school is debatable (Munn *et al.* 2000: 18). Of the total pupil population, an estimated 2,104 of Scotland's pupils were recorded as educated in outwith school settings during 2000/01, which decreased in 2001/02 to 1,600. The decrease was mainly due to the end of the outbreak of foot and mouth disease, with higher numbers being outwith school as the outbreak ran its course. Other pupils who cannot attend school are those with prolonged ill health, which in 2000/02 was recorded as 1,016, and in 2001/02 as 1,137. This increase is said to reflect the effects of the new duty required of education authorities.

The numbers of 'home educated' children, who by definition experience their education outwith school, are officially recorded as rising over the last two years from 349 and 451. The actual numbers are not known and official concern is reflected in the preparation of new guidance on Home Education. Currently, the

aims and objectives of home education are publicly debated (Dowty 2000; School Home Education Association 2001/2002). There are other pupils who will not attend school, those who choose to truant, or through disciplinary exclusion from school or are not allowed to attend school; again official estimates do not reflect how many children this actually involves.

Across these outwith school pupil populations, educational experiences are characterised by the negative effects of interrupted learning. Albeit for a range of individual and organisational reasons, such pupils typically experience restricted access to a full curriculum relative to their peers in schools, and were reported as less likely to be presented for formal examinations. The perspective of interrupted learning was adopted in this research precisely to shift the research focus from children, classified by stigmatised labels, onto the impact and outcomes of decision making that result in interruptions to teaching and learning processes (See aims and objectives below).

In terms of entitlement to equality of opportunity for all pupils, particularly to appropriate and relevant support for their learning, these findings raised the questions.

How well are teachers of such pupils provided with technology to support the needs of their pupils? What kinds of ICT training and resources are teachers of such children provided with? Do these opportunities and resources represent quality? Are teachers working in outwith school settings equipped and professionally supported in ways that enable them to provide their pupils with equality of opportunity in access to ICT developments?

2. Phase 3 - Research with teachers and pupils in outwith school settings

The added value of this phase of the research is its potential for identifying quality indicators of provision for two pupil populations who share a common experience of significant interrupted learning, which is often associated with poor motivation for formal learning. Such pupils frequently have educational needs that do not cohere with those generally expected of pupils of the same age, thus they require additional support if their levels of attainment are to be raised. Significantly, the earlier phases of this research found that, "During processes of receiving and working with the laptop, pupils (in mainstream schools) are reported to experience an increased interest in schoolwork." (Padfield & Jordan 2002: 3.7). Provision of laptops to teachers working in outwith school settings would go some way towards ensuring these pupils' entitlement to a relevant and appropriate curriculum and to prepare them as citizens equipped with the skills to participate fully in society.

3. Methodology

This report derives from qualitative and quantitative research conducted from June 2002 to November 2002 that examined Scottish education authorities' provision of laptops to teachers working with the two pupil populations (already discussed above) in two outwith school settings:

- alternative centres for pupils excluded for disciplinary reasons, which included outreach services
- on-site portacabins for Gypsy/Traveller pupils.

Phase 1 and 2 of the research showed that a continual feature of any contacts between teachers and pupils from both these groups are necessarily negotiated in terms of uncertainties associated with places and times for meetings.

These settings were therefore chosen for three linked reasons:

- the portability of laptops
- the technological potential of laptops for accessing relevant and appropriate software for pupils and
- the communicative possibilities that laptops have, when connected with associated ICT peripherals, for transcending problems of time and place.

As a long-term goal, this research will contribute to debates regarding use of laptops and associated technologies to compliment existing support of pupils' access to a more relevant and appropriate curriculum, that takes into consideration individual situations and learning styles.

3.1 *Research Aims*

This research set out

- to establish the extent to which teachers working in two outwith school settings were provided with laptops
- to examine the impact of laptops on outwith school provision
- to begin to establish what benefits and/or problems use of laptops presented in practice
- to identify the potential of ICT as a means of overcoming the negative effects of interrupted learning.

Ultimately, it is hoped that non-stigmatised processes of accreditation of pupils' work can be organised. Central to this aim is the recognition that accreditation of a pupil's work should not rely upon his/her attendance and/or presentation for examination at a school.

3.2 *Research Design*

After gaining official permission, qualitative research was conducted in **4** Scottish education authorities, in **2** kinds of outwith school settings:

- alternative centres, which for the purposes of this research included teachers working in education authority outreach services for pupils (See below)
- on-site portacabins provided for Gypsy/Traveller pupils not attending any school.

3.3 *A Mixed Methods Approach*

Data was gathered through three methods; semi-structured qualitative face-to-face interviews, a questionnaire and ethnographic notes compiled on each visit to educational settings. Our iterative approach to data analysis reflects our constructivist perspective of teaching and learning as a social process (Robson 2002: 27-29). All teachers' and pupils' individual taped interviews were later transcribed, which in the case of teachers were returned for their comments. All teachers returned qualitative interview transcripts with their comments, which were duly integrated into the overall analysis. Additional quantitative data on education authorities' laptop provision and use with Gypsy/Traveller pupils was gathered by means of a questionnaire completed by 68% of the members of the Traveller Education Network (TENET). TENET members constitute an informal association of designated staff working with Gypsy/Traveller pupils across Scotland, which during 2001- 2002 varied from twenty-one to twenty-three members. The members of TENET are Scottish education authorities' main provision of support for learning for Gypsy and Traveller pupils, particularly those not attending mainstream schools.

3.4 *Research Participants*

Participants in the qualitative research consisted of:

- **5** teachers working in
- **2** Scottish education authorities with
- **5** pupils, **1** girl and **4** boys, ages 14 – 15 years old who had experienced or were in danger of experiencing disciplinary exclusion from school, and
- **3** other Scottish education authorities with
- **10** pupils, **6** girls and **4** boys, whose ages ranged from 3 to 17 years old, from Gypsy/Traveller backgrounds.

Participants in the quantitative survey included:

- **14** members of TENET.

3.5 *Research questions*

The research questions (See Appendix 1) consisted of questions for teachers and pupils, designed to establish factual details of laptop provision and the relationship between a teacher receiving a laptop and having access to training in their use. In addition, questions were asked to establish what kinds of peripheral technologies, for example, software, printers and mobile telephones, teachers and pupils in these outwith school settings were able to access.

3.6 *Access to teachers and pupils*

Initial approaches to teachers were through official channels on the basis of two criteria; their official role in relation to the authority's provision for the two selected pupil populations and on their willingness to participate in the research. Phase 3 of the research drew upon contacts made during the first two phases of the research, in which participants had indicated their willingness to act as research gatekeepers to children who could be invited to participate in the research.

3.7 *Ethical researching in education*

Achieving an ethical approach to the selection of participant children relied heavily upon developing rapport, trust and giving equal commitment towards the aims and objectives of the research, between researcher and teacher participants. Teachers were required to assess individual children's likelihood of being able and willing to participate in the research. Thereafter, teachers facilitated the necessary introductions and on-going negotiations between researcher and individual children in securing and maintaining children's on-going informed consent, and their parents'/carers' permission.

Negotiating access to pupils was constrained by three main conditions; the relatively small numbers of pupils currently supported by teachers in these settings, the transient character of teachers' contact with many of their pupils, and the teacher time commitment required to facilitate introductions between the researcher and participants. In one cohort, for example, attempts were made to interview **8** pupils, however just **5** pupils participated; **3** withdrew due to particular difficulties on the Gypsy/Traveller site that occurred during the time allocated to fieldwork. These pupils were not followed up due to difficulties in gaining the child's consent and his/her parents'/carers' permission.

A combination of these significant factors exacerbated the difficulties of conducting ethical research with 'hard to reach' populations (Milbourne 2002), and served to prevent new negotiations with additional pupil participants at that alternative education setting. Nevertheless, it transpired that making contact with Gypsy/Traveller pupils was relatively easier to accomplish, but this was arguably a matter of serendipity.

4. Teaching and learning in outwith school settings

Teachers from both settings were asked to describe their professional backgrounds and their professional remit, for example, who they taught and where they taught.

4.1 *Variations in teachers work in 'alternative centres'*

Generally, the teaching remit of staff working in 'alternative centres' involved pupils ranging from 11 to 16 year olds, some of whom were experiencing complex difficulties encapsulated within the label, 'social, emotional and behavioural difficulties', and had been offered alternative education after disciplinary exclusion from their mainstream schools. The teachers interviewed from one education authority had a particular interest in supporting 'looked after' children, some of whom had experienced disciplinary exclusion. The pupils currently attending the YPC, where the teachers interviewed worked with them, were all experiencing the negative educational impact of interrupted learning, which was illustrated by their significant lack of interest in formal learning.

The teaching duties of staff in alternative centres reflected the wide range of pupils' learning needs; primary and secondary schooling, specifically maths, computing, English, support for learning and English as an Additional Language. All those interviewed were based in alternative educational centres or at psychological service centres. Whilst no teacher was based in a school, some had maintained links with mainstream schools through split-time appointments. These teachers reported teaching pupils in a range of places, for example in different parts of a pupil's base school, in other schools, in local community centres, in libraries and even church halls. These places were chosen partly to avoid teaching in a pupil's home. Teachers working in outreach settings described a number of concerns about teaching pupils in their own homes. Teachers did not consider 'home teaching' to be a good location, as frequently pupils' homes were not sufficiently calm for focused learning. It was also reported as necessary to avoid intimate situations, particularly for teachers who are men.

More positively, it was considered that learning to develop the habit of leaving home and arriving at an agreed place was part of the process of encouraging a youngster to participate co-operatively in the public domain.

4.2 *Teachers of Gypsy/Traveller pupils*

The overwhelming majority of TENET members, whose average age is 48 years, were General Teacher Council registered teachers, while one was trained in a related educational field. The TENET members have a designated responsibility for supporting the education of Gypsy/Traveller children in Scotland, whose ages range from pre-school, 5 to 16 and in some cases up to 18 years of age. One had responsibilities only for Occupational Travellers and one for working in Community Education.

TENET members described teaching duties that also covered a wide range of other pupils' learning needs. These consisted of English as an Additional Language, as learning support staff in nursery, primary and secondary schools, specifically including literacy, cross curricular and cross sector work.

Less than a quarter of TENET members were based in a school; most were based in a combination of school and alternative educational centres, whilst a few were based in places not officially designated as schools or educational centres, for example portacabins on Gypsy Traveller sites.

Similar patterns of different locational arrangements were reflected in teachers' reports on where they taught; whilst some pupils were supported in schools, most Gypsy/Traveller pupils were taught outwith mainstream classrooms, for example in family trailers, in community centres and in on-site portacabins.

4.3 *Outwith School Settings - similarities and differences*

Working in outwith school settings necessarily involved daily transportation of learning materials, pupil records and administrative records, from an administrative base to multiple teaching places and back again. Evidence from teachers in both cohorts demonstrated the significant demands made upon their *professional time and personal energy*.

Quote:

***Teacher:** In my base, in my office space, I prepare everything in the office, which is up two flights of stairs ... and then it all has to go into boxes, down the two flights of stairs into the car, every time I come to the site. What I have brought is basically a box for each age group, so that work is there and is easy to work through as well.. . there's a box for... four age groups and a box of resources that I can dip in and out of ... and I've got other boxes and a computer ... the laptop and I've got a printer as well ... it is all very time consuming and it's twenty minutes each time you go out and back in again.*

Despite the necessary daily transportation of materials, teachers with access to a laptop gave positive reports of how a laptop had helped augment the effectiveness of their teaching and of a laptop's transformative potential for quality change for those teaching and learning in outwith school settings. Only one teacher was negative about the idea of introducing a laptop into everyday teaching and learning.

4.4 *Staff and Gender*

It was not within the scope of this research to establish the effects of gender bias upon learning and teaching experiences, however evidence of a gender bias was found in both settings.

The gender bias among TENET members was strong. Compared with **22** women only **1** man worked in this area, and only in an administrative capacity. This finding contrasts with the gender balance between the **5** teachers working with children with 'social, emotional and behavioural difficulties' where **2** were women and **3** were men.

The gender bias among pupils is also interesting to note. The numbers of pupils participating in the qualitative research were small, nevertheless, among Gypsy/Traveller pupils, girls and boys were more equally represented in contrast to the second pupil population, which consisted of significantly more boys than girls.

Despite having recorded previous problems associated with gender issues, evidence was found of girls being assigned to alternative educational settings where the overwhelming majority of pupils were boys with serious relational difficulties.

Quote:

PP: ... do you miss the fact that there are no girls here?

Girl pupil: Aye

PP: Is that the bit about it that is difficult?

Girl pupil: Aye, cos it was at the high school it was hard, because even though I had girls friends and that, eh, but aw the laddies, ken, just used to try and do stuff...

The confusing impact of gender on pupils' experiences of schools is reflected in on-going debates about educational 'attainment' (Delamont 2000). The differential impact of gender on placement of children in secure accommodation, which is perhaps the most extreme example of an outwith school setting, is also well documented (O'Neill 2001). Therefore the above finding is not new; nevertheless, it points to the complexities, personal and social, that constrain education authorities' attempts to meet their duty to provide education for all pupils, particularly the most vulnerable.

5. Provision of education authority laptops to teachers

Staff working in alternative centres and on-site portacabins were asked if they had been provided with laptops, whether for shared or personal use, and how many pupils each teacher was expected to support. Teachers' responses to these questions established that *time constraints* impacted differentially upon their ability to integrate their use of a laptop into their everyday working practices.

5.1 *Laptops for teachers working in alternative centres*

Analysis of teachers' reports showed wide variations in provision of education authority laptops. Among the 5 staff working in alternative educational centres,

- 2 had not received a laptop
- 1 had shared access to a laptop
- 1 had been provided with a laptop
- 1 had serendipitously 'acquired' a laptop.

The serendipitous laptop had been acquired in 1998, whilst the other two were provided in 1999.

Teachers also reported variations in the general availability of laptops

- 1 of the teachers reported that one laptop was available for use by a staff of **24**, serving up to approximately **60** pupils from primary to secondary age, some of whom attended the centre and some who were taught outwith the centre. The laptop, heavily used for teaching and learning in the alternative centre, was not taken out of the alternative centre to pupils. In addition to the laptop, the centre was reported to have just one desktop computer.
- 2 teachers had personal use of a laptop, although one teacher reported having to argue a case to keep the laptop, for use with up to **8** pupils, all of whom were taught on a one-to-one basis and in a number of locations.
- 2 teachers did not have access to any laptops for their own use or for use with pupils, however their workplace was supplied with sufficient modern stand alone computers with printers attached, for their own use and for up to **12** pupils, taught on a one-to-one basis.

All 5 teachers had access to a computer *but up to mid-2002* teachers in outwith school settings were not equally well equipped with laptops or with desktop computers.

5.2 *Laptops for teachers of Gypsy/Traveller pupils*

Analysis of the TENET questionnaire revealed that among the **14** members who responded

- **10** teachers had access to a laptop
- **8** of which were funded by the education authority
- **2** had bought their own laptops.
- **4** had not received a laptop at all.

The first of these laptops was provided in 1998, two in 1999, two in 2000, two in 2001, with the last two arriving in 2002.

Responses to questions about teachers' access and use of other kinds of computers, suggested that desktop computers had become more readily available since 1999. Of the **14** teachers,

- **9** reported having access to computers
- **5** remained without access to a computer, up to mid-2002.

Generally, staff reported access to laptops as being shared with other teachers, for example with up to **6** teachers sharing one laptop. However, in one education authority the only teacher working with Gypsy/Traveller pupils had full time access to one laptop.

Scottish education authorities were shown to differ in their provision of laptops for teachers working in outwith school settings; from no laptops at all to individual personal use of a laptop. Inevitably, these differences were reflected in Gypsy/Traveller pupils' reported use of laptops, which showed

- most laptops were not directly available for pupil use
- that where laptops were used by pupils, their hands-on experiences were limited by the high numbers of pupils supported by one laptop
- one teacher as having a laptop to support **85** pupils
- another teacher had one laptop to support **40** pupils.

Generally, the number of pupils with access to one laptop varied according to the numbers in the group, which changed with families' movements.

5.3 *Provision of laptops - similarities and differences*

Teachers' reports illustrated some of the ways in which education authorities varied in their provision of laptops; from none at all to relatively generous, as illustrated by the quotes below. TENET members, for example, reported,

Quotes:

Teacher A: *Laptop was there when I arrived in post.*

Teacher B: *Laptop was given as part of the post.*

Teacher C: *Shared computer for teachers use only / no Internet as yet / prospect of laptop and Alphasmarts in the near future.*

Such variations in provision led to variations in teachers' reported use of laptops, both for themselves and by their pupils. Some teachers of Gypsy/Traveller pupils challenged the notion of 'provision' as something being provided, as they had had to argue strongly for funds to buy a laptop.

Quote:

We were not actually 'provided' with our laptops, but we acquired funding for specific projects, which required their use (from external to local authority education funding sources).

The above quote illustrates that despite a laptop's obvious usefulness in terms of portability, education authority provision of laptops was not automatic and in some cases provision of laptops has not yet taken place. Thus these teachers accessed other sources of funds.

The TENET survey showed that *as late as June 2002*, some teachers of Gypsy/Traveller pupils were not in possession of any adequate technological support either for themselves or for their pupils

Quotes:

Teacher 1 : *We will receive one laptop and some Alphasmarts in August (2002) for four teachers. Probably no training.*

Teacher 2: *At present I do not use either PC's, laptops, etc., with any Gypsy/Traveller child who I am supporting. I will shortly be working with secondary age Gypsy/Traveller using a laptop and Alphasmart machine.*

Significantly, teachers in 'alternative centres' experiences of provision were not comparable across education authorities. The teacher's statement below can be contrasted with the relatively generous provision for outreach teachers from another education authority, which had provided their outreach teachers with personal laptops.

Quote:

PP: *Are the teachers in this provision/setting provided with laptops?*

Teacher: *No*

PP: *Could you tell me ... why have you not had laptops do you know?*

Teacher: *Well we don't have enough money in the budget to buy a laptop for any teacher in this part of the service ...*

In both settings, a number of teachers believed the reason for their not having been provided with laptops was due to laptops being seen as too expensive a form of support for learning, particularly with pupils from these two populations who were frequently perceived as 'non-deserving'.

Nevertheless, the teachers argued that education authority provision of laptops signalled that they, as professionals, and their pupils were as 'deserving of the expense' as their mainstream colleagues and pupils.

5.4 *Teachers' use of laptops with pupils*

Evident *inconsistencies in provision* of laptops were echoed in staff reports on their *use with pupils* in outwith school settings.

While there were cases where

- **no** laptops were available for *teachers or pupils*
- in cases where a laptop was available for a teacher's use, pupils' hands-on experiences were
- limited by a heavy demand on the laptop
 - further exacerbated by the range of learning needs the teacher was seeking to support.

Analysis showed that three main inter-dependent factors shaped pupil use of a laptop

- the actual hands-on time a teacher was able to spend with a pupil
- a teacher's knowledge, skills and capacity to locate suitable software for any one pupil's particular learning needs
- a pupil's willingness and capacity to engage in formal learning opportunities.

Those teachers who had integrated a laptop into their everyday teaching were positive about its benefits. The teacher's comment below was particularly significant in that a pupil's motivation to learn is a basic requirement for effective learning.

Quote:

The key benefit of using a laptop is that the materials are engaging for the pupil, and that the focus of the teaching and learning interaction is upon the laptop and the materials rather than on the pupil and/or how he or she learns.

While access to laptops, particularly for Gypsy/Traveller pupils, were reported as inadequate, those teachers who had taken advantage of the opportunities afforded by this portable technology already had had positive experiences with using them and would certainly welcome an increase in provision of education authority laptops.

6. Teachers' skills with laptops and other ICT

Analysis of teachers' responses showed that their skills with laptops and associated ICT were acquired in three ways; self taught through trial and error, supported by pre-NOF training courses and, lastly, a few had attended a NOF training course. In addition, in both settings four main points of concern emerged regarding education authority laptop provision and training

- there was a recurring mismatch between receipt of and training in the use of the laptop
- frequently training was not tailored to a teacher's own needs and skills
- training was not sensitive to the breadth of their pupils' needs.

6.1 Teachers working in alternative centres

All these teachers reported being able to create files, use a mouse, cut and paste within and between documents, use software packages and print out their work. While all 5 teachers had developed their basic ICT skills through self teaching

- 2 teachers had attended a NOF training course
- 2 teachers had attended an Edict course.

Some teachers reported a lack of awareness in education authorities to teachers' training needs. One teacher, for example, described the negative impact of changes in education authority choices of technology platforms.

Quote:

... there are quite a few of us who were AppleMac trained and who do not convert easily to PC ... I have gone to PC training, but unfortunately the trainers have not been sensitive enough to the fact that you can be educated to Masters level and still be dyslexic when it comes to learning new skills . . .

The significance of this particular example is that the teacher concerned reported

Quote:

Teacher: *... I worked very very (emphasis stressed) hard in acquiring skills and having acquired them I was increasing my knowledge and developing my skills and then I have to go back to square one again... down the ladder and there I have to start again.... Much of it is lost knowledge now...*

Education authority decision-making had had a significant and negative impact upon her use of ICT.

6.2 Teachers working with Gypsy/Traveller pupils

Teachers of Gypsy/Traveller pupils, who had received training in the necessary skills for using a laptop, reported their training as poorly synchronised with the actual arrival of the laptop.

Only 2 people had attended a NOF training course, whilst most had developed their skills through a combination of self taught or pre-NOF training courses, for example European Computer Driving Licence (EDCL).

Nevertheless, all teachers reported having basic skills in using laptops and other computers. All teachers reported being able to create files, use a mouse, cut and paste within and between documents, use software packages and print out their work. One teacher reported that her skills were 'improving'.

6.3 *Teachers' skills - similarities and differences*

Despite reports of teachers in both settings feeling dispirited in the face of rapid technological changes some teachers had embraced the technological potential of ICT and laptops.

From each setting, examples were given that showed how some teachers, through successful adaptation of software, had developed their own skills through their successful attempts to meet the particular needs of their pupils.

While all teachers reported their concerns to involve parents in their children's learning, some teachers of Gypsy/Traveller children reported their plans to use ICT as a means of encouraging adults back into formal learning by offering a week's course in basic ICT skills.

Quote:

I've had interest from three people on the site already for that and from that I would hope that something else might develop, whether it be an evening class or the children going outwith the site. I know I could do that with perhaps help from Community Education.

Teachers' comments contained other examples that showed the significance of teacher skills in ICT in enabling them to draw in older youngsters and adults to learning. Thus, through their use of a laptop and/or desktop computer, pupils' and their families' grasp of basic literacy and numeracy was enhanced.

7. Pupils' skills with laptops

Teachers were asked to report on their pupils' basic laptop skills. In both cases, analysis showed that pupils' ICT skills were generally learned on desktop computers, ranging from basic skills that included creating files, using a mouse, printing and cutting and pasting to using software packages, such as spreadsheets.

7.1 *Teachers' perceptions of pupils' ICT skills in alternative centres*

All pupils were reported as able to demonstrate most of these skills, although data analysis showed that cutting and pasting was the least likely skill acquired by these pupils.

Pupils' ICT skills were reported as taught to them by mainstream school teachers, or as 'picked up', during use of laptops or other computers, or for other reasons, such as playing games, or when a laptop was used as a tool to explore other formal topics.

However, pupils were also currently taught ICT skills as a subject in its own right, which included basic word processing, graphics, spread sheets, databases and drawing, through a package called 'light bytes' designed for primary children, but which had the facility for adjusting its difficulty for use by older pupils.

7.2 *Teachers' perceptions of Gypsy/Traveller pupils' ICT skills*

Significantly, some TENET teachers were not able to comment as neither they, nor their pupils, had access to a laptop or other computers. Bearing in mind that so few mobile Gypsy and Traveller pupils have access to education authority laptops, teachers overwhelmingly qualified their report on those of their pupils with ICT skills, as 'improving'.

Nevertheless, Gypsy and Traveller pupils' ICT skills were also reported as taught to them by teachers, either during periods when Gypsies and Travellers had attended a school, or as 'picked up' during use of laptops or other computers in on-site portacabins, either for formal learning or when playing games. One example was given of a non-literate young person of 17 years, currently attending an on-site portacabin, who had been drawn to the provision as she had heard that she could learn the theory of driving through specific software available on the teachers' laptop.

Those TENET members with access to a laptop reported their Gypsy and Traveller pupils as able to demonstrate most of the following skills: use software packages, create files, use a mouse and print, with cutting and pasting as the least likely skill acquired by these pupils. Most TENET teachers with access to laptops were positive in their reports of laptops, but as the quote below shows, they considered more needed to be done

Quote:

Although I have ticked a lot of boxes, making this seem very positive, I feel a lot more needs to be done to improve my [own] and my pupils' skills to develop aspects of the curriculum through use of laptop and not just ICT skills alone.

This point reflects the wider debate about the benefits of integrating the use of ICT within the curriculum. Some TENET members argued for a more equitable provision of laptops, that is, relative to other colleagues belonging to TENET and to those colleagues in schools. TENET members also argued for better training opportunities in basic skills that would allow them to develop aspects of the curriculum. Improvements in both these areas would ultimately benefit their pupils' access to a relevant curriculum and thus stimulate their interest in formal learning.

7.3 *Pupils' perceptions of their laptop skills*

In both settings, pupils' perceptions of their own laptop skills varied from 'having no basic skills' to being 'knowledgeable about how to access the Internet'. Most pupils reported being taught basic skills by teachers or acquiring them through playing games at home. One boy attending an 'alternative centre', for example, had his own computer at home, which he used for playing games and accessing the Internet.

Quote:

PP: *Who taught you how to use the computer? How to turn it on?*

Pupil: *Ah dinae ken.*

PP: *You just seemed to know how to do it?*

Pupil: *Aye.*

PP: *What about using the software? Has it got drop down windows?*

Pupil: *Aye It's Windows.. I cannae remember the numbers.*

PP: *o how do you find out how to use it?*

Pupil: *You just like drag the mouse across and leave it for a couple of seconds on whatever it is and then it comes up in a wee box and that's how ye ken what happens.*

PP: *So you don't have a difficulty in reading what the boxes say?*

Puil: *Nuh*

PP: *So you just follow what the box says to do?*

Puil: *Aye.*

Many Gypsy/Traveller pupils also reported that they had been taught basic skills at a school.

Quote:

PP: *Do you know how to use the laptop computer?*

Pupil: *Yes. Um, they (teachers at school) taught me like how to work on it, how to play games on it...*

PP : *Did they teach you how to use the wee mouse?*

Pupil: *Yes*

Although the 17 year-old Gypsy/Traveller referred to above reported that she had had a computer in her family's trailer but it had been of no interest to her until she had wanted to learn to drive. She had no basic computer skills at all. She reported that she had attended the on-site provision just four times and had only ever gone to school twice in her life. As she reported that she had not stayed on official sites, I asked her if she had ever met any teachers. She replied,

Quote:

"Not really, no. "

Other Gypsy/Travellers' reports of the TENET teacher bringing the laptop to the on-site portacabin had drawn her into formal learning. Although she reported that she could turn on the laptop and get images to appear on the screen, she could not read the instructions. She expressed her desire to learn basic reading skills in the belief that she needed to read to pass the theory part of a driving test.

8. Provision of education authority ICT peripherals to teachers

Staff and pupils in both settings were asked questions about the education authority provision and their use of associated ICT peripherals, which included printers, mobile phones, Internet access, email and their views on available software. Did they consider such software as relevant and appropriate for their pupils' particular learning needs? Did the software provide pupils with learning experiences that facilitated preparation of folio work required for examination and accreditation purposes?

8.1 *Provision and use of printers*

Data analysis showed that these teachers and pupils did not see the printed results of their work to the same degree of immediacy as their mainstream colleagues and peers.

While all **5** teachers working in 'alternative centres' had access to printers, no teacher had access to an education authority provided portable printer. As a result, pupils in alternative centres, particularly those educated literally outwith school, who did not attend a designated building equipped with a printer, were generally not able to see or handle hard copies of work done on the laptop without waiting, at best, for a number of days.

Although all TENET members designated for Gypsy/Traveller pupils had access to printers, only **4** had access to education authority portable printers. Gypsy/Traveller pupils not attending school are also generally not able to see or handle hard copies of work done on the laptop without waiting for a number of days.

8.2 *Provision and use of mobile phones*

All staff were asked if the education authority provided them with mobile telephones.

Among the small sample of teachers in 'alternative centres', only **1** teacher reported having a mobile telephone, which she had provided for herself. She described the time benefits of having a mobile telephone as it enabled her to call ahead to the centre to check that her pupils were present. If not, she did not waste professional time driving to the centre, but instead would do another task. The mobile telephone thus enabled the teacher to make decisions that both reflected and enhanced her professionalism.

3 of the **5** teachers were required to teach children in outwith school settings that were often located in areas where public telephones are few and far between, and frequently poorly maintained.

Most teachers of Gypsy/Traveller children reported similar teaching conditions. Many staff are required to travel to and between schools, to residential sites and various other locations to support youngsters and classroom teachers with Gypsy/Traveller pupils. Of the **14** TENET teachers who responded

- **6** had an education authority mobile telephone
- **3** were provided in 1999

- 1 in 2002
 - 1 in 2001
- and finally,
- 1 in 2002.

Some teachers expressed concern about their education authority's failure to provide teachers working outwith school with mobile telephones, which raised issues of personal safety and security. However, some teachers reported that they did not expect to be provided with mobile telephones as they considered the education authority would not be prepared to fund the cost. An education authority's failure to provide mobile telephones is an omission that raises questions about taking teacher and pupil safety and security seriously.

8.2 *Provision and use of Internet*

Significantly, staff responses to questions about access to and use of the Internet showed that the relevant question was not *whether teachers* used the Internet, but *where* they were able to use it.

Among teachers working in alternative centres

- 1 was connected to the Internet at work, which she used frequently.
- all others described the Internet as "not available yet".

These teachers reported their reliance upon accessing the Internet at home.

One alternative centre had sufficient stand-alone computers, some leased from the authority's ICT support unit and some built by one of its outreach teachers. Although connection with the Internet was possible at this venue via the stand-alone computers, they were not networked.

While the education authority had provided secure websites, teachers decided that it was "too risky" to have the computers networked on a day- to- day basis. They reported their belief that it was not possible to prevent pupils from accessing unsuitable websites which led to a decision that the computers stay 'unplugged' for networking except at specific times. These beliefs had negative impacts upon teachers and pupils. Neither were able to make full use of the computers as a communicative tool for accessing the learning and teaching opportunities available on the Internet. In addition, teachers working in this setting generally reported they "have to work at home", when they required networking facilities.

Among 14 teachers of Gypsy/Traveller pupils surveyed only,

- 12 reported using the Internet at least once a week.
- 2 reported never using the Internet to support their teaching

Importantly, on-site portacabins were not wired up for Internet use.

Some Gypsy/Traveller teachers reported using desktop computers, some of which were wired up, which enabled their access to the Internet at work. However some were not. The majority of these teachers reported using the Internet for their work but that they were forced to rely upon accessing the

Internet at home. These low levels of technical adequacy fall far short of the HMI's recommendations for use of ICT in learning and teaching (HMI 2000:27 - 31).

8.4 *Provision and use of email*

Staff problems regarding Internet availability at work had implications for staff and pupil use of email. Responses from staff working in 'alternative centres' showed that in May 2002

- no teacher or pupil in education authority A 'alternative centre' had an education authority provided email address
- 1 teacher working in education authority B 'alternative centre' had access to an education authority provided email, which was used regularly
- 1 teacher working in education authority B, at another setting, had been given an education authority email address but was not able to use it at work as the Internet access had not been set up.

Such variability of access to email within an education authority clearly suggests that there is a long way to go to achieve equality of opportunity to the transformative possibilities of ICT within the curriculum (Conlon and Bird 2000).

Responses from TENET members showed that

- 11 staff had access to email
- 5 of whom received one during 2001
- 3 staff had not yet been provided with an education authority email address.

These staff varied in their use of email from 'never using it', to 'using it once a day'. Most staff stated they accessed their email 'more than once a day'.

Staff from both settings who used email described communication difficulties between colleagues via email, as exemplified by the teacher below.

Quote:

***Teacher of Gypsy and Traveller pupils:** There are two systems ... there's Outlook and there's Firstclass. The education centre is on Outlook and the school's are on Firstclass, which is not ideal because you can't (we both laughed at the mix-up's we could imagine resulting from use of these different servers)*

The teacher's comment went on to show that while headteachers had access to email, through Outlook, a teacher working from an Education Centre had access to email through Firstclass, "... But, you can't link between the two". In addition, the teacher said, "you can't send messages to specific teachers" in schools. The teacher argued that every teacher should have that facility. The researcher's attempts to contact these staff by email also frequently resulted in emails being returned from the receiving end, for a variety of reasons. The problems were of such frequency that it called into question the day-to-day reliability of education authorities' Internet services.

An additional question arose about privacy in relation to accessing an email address; some professionals reported only having access to an email address shared with line managers, some of whom placed constraints upon who was allowed to open any emails received. Examples were given of parents attempting to access support for learning for their child through emails that were unopened until the designated person returned from holidays.

8.5 *Provision and use of software*

Teachers from both settings mostly found out about relevant software through actively seeking software advice from colleagues and from their education authority, but less so from written sources such as magazines.

Among teachers working in 'alternative centres'

- **4** reported using software, mostly CD-ROM software, but also materials downloaded from the Internet, and/or software already loaded into desktops' or laptops' hard disks.
- **2** of these teachers considered the funding of these resources to be adequate
- the other **2** thought that funding was not adequate.

Most of these teachers were relatively happy with the quality of software. However, one teacher raised the point that some of the software turned out to be "rubbish", that is, the description of the software's potential was not realised by its use, either in relation to its quality and/or appropriateness for pupils' learning needs. Much of the available software was evidently not designed to take into account a discrepancy between chronological age and reading age levels in literacy competence. Generally, TENET members and teachers in 'alternative centres' expressed difficulties in finding interesting and appropriate software for pupils whose ages did not correspond with their literacy and numeracy capabilities.

The term 'computer phobic', used by another teacher, suggested a medicalisation of a negative response to using the laptop, whether teacher or pupil, which was then explained as his/her not having a basic level of literacy to cope with the laptop's textual prompts.

Staff using ICT with Gypsy/Traveller pupils also reported using CD-ROM software and/or materials downloaded from the Internet, or, software already loaded into desktops' or laptops' hard disks.

- **6** staff did not consider the funding of these resources to be adequate
- the remainder were split evenly in thinking that funding was 'adequate' or 'not bad'
- the majority of TENET members reported that they were relatively happy with the quality of software
- **2** stated they were not happy
- the rest qualified their response as 'partly happy'.

Generally, TENET members qualified their responses in terms of wanting more appropriate and interesting software for Gypsy/Traveller pupils, which was

reported as being hard to find. One took the opportunity, which was provided, at the end of the TENET questionnaire to recommend that,

Quote:

[It] would be beneficial as an outcome of this phase of the research to create some type of resource bank/list of useful and skill related software/websites etc. to ensure that interrupted learners can be supported using the laptops that are in use.

Overall, the research found that provision of ICT peripherals to teachers, which amplify the effective use of laptops, varied considerably between education authorities, from excellent to very poor.

However, it is important to note that in both settings, teachers had developed their ICT skills by adapting existing software for their pupils' particular learning needs. These examples cannot be described in this report as to do so would compromise participants' anonymity.

8.6 *Similarities and differences in pupils' access to ICT peripherals*

Although all pupils in both settings had access to desktop computers, some pupils had only limited access to laptops, generally through their teacher's access to a laptop. Only two pupils had access to printers at home, two boys attending an 'alternative centre'. All pupils knew about mobile telephones and a number spontaneously related descriptions of emailing to text messaging. One Gypsy/Traveller pupil reported having had a mobile telephone supplied by her family.

Significantly, all pupils interviewed in alternative settings had lost access to an education authority email address, which was reported as being provided in the mainstream schools which they had previously attended. As these pupils only had access to stand-alone desktop computers (not linked to the Internet), they could not be used for email. Thus not only were they separated physically from former peers and teachers, they were also excluded from email communication with them. All pupils in alternative settings reported they had had no communications with teachers and pupils from their base school.

It is very significant that none of the Gypsy/Traveller pupils had ever received an education authority email address.

Among both cohorts of pupils, some reported their familiarity with how the Internet worked. Some pupils, learning in alternative centres, also reported using it, mostly at home, whilst one boy described using the Internet facility at his local library. The same boy also reported a reduction in his ICT support since attending the alternative centre. At his mainstream school, he had had regular access to an Alphasmart, which was no longer provided for him in his outwith school setting.

Although two Gypsy/Traveller pupils were familiar with Internet and emailing most were not familiar with either. However, two other pupils were familiar with text-messaging and using mobile phones.

All pupils were familiar with the potential of laptops in relation to computer games and schoolwork and most knew about software as a means of accessing these facilities. Some were less clear about software and how it was accessed, either through CD-ROM or the Internet.

In summary, these pupils varied in their knowledge and understanding of laptops and their potential when connected to this range of ICT peripherals, but all had sufficient understanding to know that they offered opportunities for learning and for use in accessing information about the wider society. Some older Gypsy/Traveller boys, for example, attended the on-site portacabin, partly motivated by the hope that their teacher had printed some leaflets advertising their family business. The leaflets, designed for local distribution, demonstrated the sense of purpose that motivated their attempts to use new technologies. More importantly, it was evident that such provision had the power to draw in secondary age Gypsy/Traveller boys who generally do not attend school.

9. Educational, personal and social effects of laptops

All teachers and pupils were asked to describe the impact of laptop computers on their experiences of teaching and learning in outwith school settings. Analysis of their accounts revealed that teachers in both settings emphasised the centrality of establishing a quality relationship with a pupil as a necessary basis for providing effective support for a pupil's learning and, if possible, with a pupil's family or carer.

9.1 *The relational basis of effective teaching and learning*

While the conditions in which good teaching and learning relationships were achieved were shown to vary between and within the two settings researched, many examples emerged of what a Phase 1 participant reported earlier, " ... *(that) a teacher's needs are shaped by their pupils' needs, as 'that's where the weans are that need the support'*" (Padfield and Jordan 2002: 96).

Teachers in alternative settings, for example, reported some of the serious difficulties that many of their pupils face on a day-to-day basis. Some children, for example, cannot sit down for any length of time, or make eye contact with their teacher. Some children do not know when they will next eat, or where they will sleep at night. These matters were described as of continual concern and of greater immediacy to such pupils than any specific formal learning task.

In such conditions, teachers expressed their main desire being to engage pupils' interests in learning and to help them achieve positive habits that support formal learning, such as regular attendance in the hope that pupils can go back to school. The majority of teachers argued that providing teachers with laptop computers and appropriate training helped augment the development of an effective formal learning experience with pupils. Teachers' and pupils' accounts also showed that the impact of laptop computers was thematically linked across three interrelated areas, the educational, the personal and the social a combination of factors that constituted pupils' everyday experiences of teaching and learning. In these settings, educational achievements were frequently described as positive outcomes of good relational processes between teachers and pupils.

9.2 *Teachers' views: beneficial outcomes of using laptops*

Analysis of the qualitative data suggested that laptops had a number of beneficial impacts upon teaching and learning, particularly among children who were deeply disinterested in formal learning. Teachers' reports suggested the introduction of a laptop had produced improvements in pupils' achievements in formal learning tasks that were associated with improvements in a pupil's self-esteem and his/her relationships with teachers and with other pupils. Thus, educationally, general reports of improvements in pupils' interest in learning, particularly when relevant and appropriate software was available, were reflected in

- better achievement of learning tasks
- improved quality of presentation of their work for everyday assessment
- deeper understanding of what they were learning.

9.3 *Learning and teaching: similarities and differences between outwith school settings*

Teachers in both settings described the long-term intention in supporting the pupils as being that such pupils would eventually return to mainstream school. However, this view was qualified by teachers working in alternative settings saying that in practice this rarely happens. One pupil's comment reflected the complexity of social relations at school.

Quote:

PP: *Do you have any contact with your last mainstream school?*

Boy: *No.*

PP: *Not by email or anything?*

(Boy's face twisted into a negative look)

Boy: *I would go for a visit.*

(Boy's facial expression and gradual lowering of his voice conveyed a sense of wistfulness)

PP: *You'd go for a visit?...*

Boy: *Aye to see ma old teachers. I'd like to go back and see the head teacher.*

PP: *You want to go back?*

Boy: *No, not to go back to the school ... just to go and see him*

PP: *Why would you not want to go back to the school?*

Boy: *Ah dinna like it. I did not like that school because it was there that they got me excluded, ma pals and aw that.*

Teachers in alternative centres described how they begin working with a new pupil on a one-to-one basis, with the hope of helping a pupil to integrate into small group learning settings. One teacher made the point that initial work with pupils involves "making a relationship with the child", as he considered that the establishment of trust was a first step in the process of overcoming the significant gaps in the education of pupils described as 'school phobics' or 'truants'. In his experience many such children had lost their capacity to trust either adults and/or their capacity to learn.

Another teacher, whose one-to-one working with 'disaffected' pupils relied upon a pupil turning up at an agreed place and time, said, "my relationship with the child is the monitoring process". The point was turned around and the teacher was asked who monitors a teacher's actions as the 'other' in the relationship? The teacher considered that his not turning up to meet a child was unthinkable as the service depends upon establishing trust between him and any pupil.

By contrast, Gypsy/Traveller pupils rarely receive such intensive one to one teaching compared to pupils in other outwith school settings. In this research, for example, some of the Gypsy/Traveller children were siblings and cousins, whose ages ranged from three to seventeen, all of whom arrived at the on-site portacabin more or less at the same time. In addition to age differences within the group, the formal learning levels of individual Gypsy/Traveller pupils did not correspond with what might be expected of their mainstream school peers of similar ages. Gypsy/Traveller pupils' experiences of significant interruptions to their formal learning are reflected in disruptions to both their relationships with teachers and in their formal achievements. The issue of trust and the confidence

that trust inspires were also reported as having a significant impact upon teaching and learning with Gypsy/Traveller pupils.

Despite such problems, teachers reported some pupils as having achieved educationally, for example, pupils considered to be 'disaffected' with learning, were reported to have secured foundation/general level Standard Grade English, Maths and History.

The educational achievements among Gypsy/Traveller children did not include any references to Standard Grade examinations, but the introduction of laptops was reported to have improved Gypsy/Traveller pupils' interest in learning.

9.4 *Educational effects of laptops for pupils disaffected with learning.*

In association with other forms of technical equipment, for example, lego-type building blocks that could be mechanised, teachers had found they were better able to gain the interest and motivation of pupils to engage with learning, and ultimately their acceptance of more conventional teaching and learning materials.

Teachers described how presenting learning materials via a laptop re-engaged pupils' interest in the process of learning in the following way. Initially, pupils' interest was in the laptop itself. Subsequently the focus of any teaching and learning interaction was with how the laptop could be used to get at materials relating to the learning topic. This focus contrasted with what was usually the case with more conventional materials, such as paper and books, in which the focus of interaction tended to be on the pupil and/or how he or she learns. Pupils' positive learning outcomes, achieved through use of laptops, were reported to have additional beneficial effects on pupils' feelings about themselves, particularly in relation to their own *capacity* to learn.

The following account illustrates the experiential interconnections between conceptually separate issues of self-esteem, social interaction between teacher and learner and effective educational outcomes.

A teacher described his experiences with a secondary aged boy with moderate learning difficulties whose interest in formal learning was described as low. The pupil was reported to have serious problems with simply sitting down at a table with the teacher, which the teacher addressed by offering the boy an opportunity to play an adventure game on the teacher's laptop. He hoped such a reward could help the pupil overcome his negative feelings about sitting down with the teacher long enough to stimulate the pupil's interest in the game and in the laptop's potential. While the teacher did not like the practice of using 'rewards' as a carrot for learning, the laptop effectively provided a focus of interest on the table, which a book or paper materials could not have achieved. In time, this strategy achieved an important outcome; the pupil and teacher built up trust and rapport between them, which allowed for a gradual introduction of formal curricular materials. The teacher considered the laptop as an essential object for inclusion in any teacher's 'bag of tricks', which would help reinforce learning with textbooks.

Another example illustrated the deep learning potential of laptops in supporting learning. The teacher described the case of a pupil's quest to solve a trigonometry problem which entailed taking a bearing, knowing about the 360

degree markings on a compass and plotting the path of a boat across a river. The task involved gauging the boat's success in reaching its safe harbour. This was demonstrated in two ways; by using a compass on paper and then comparing it with the multidimensional capabilities displayed on the laptop screen. In the latter case, which entailed the presentation of learning tasks in a graded way, the pupil could see images of the concepts that he was learning about. This process reinforced learning in that the teacher considered "the child endures the task because he or she wants to succeed", i.e., to get the bearing. The teacher said, "It is satisfying to see the boat move on a complicated course and arrive correctly." The laptop was demonstrated to have engaged the pupil's concentration for longer periods of time than was possible with a piece of paper and a compass. Thus, the teacher reported a deeper understanding was gained of what taking a bearing entailed than would have been possible with only a paper and pen exercise.

Educational software that drew upon the capacity to move materials on a screen was reported as being highly successful, particularly when used strategically, i.e., at the pace of the pupil's learning. This point, *reiterated as educationally important*, was volunteered in interviews by several teachers using laptops.

9.5 *Educational effects of laptops with Gypsy/Traveller pupils*

The qualitative research conducted with teachers and their Gypsy/Traveller pupils, also showed that laptops were considered very useful for stimulating pupil interest in learning. Teachers' qualitative reports of the beneficial impacts of laptops on formal learning were thus explored in the questionnaire administered to TENET members, in a section that offered limited opportunity to consider the educational, personal and social effects of using a laptop on Gypsy/Traveller pupils.

Analysis showed that of TENET'S 14 respondents

- 4 teachers were not able to respond to these questions because they had not been provided with a laptop for use with Gypsy/Traveller pupils
- 10 teachers, able to answer these questions, confirmed the view that their pupils' interest in learning was positively stimulated by the introduction of a laptop.

9.6 *Pupil self-esteem*

Among these same 10 teachers

- 9 teachers considered that using a laptop helped their pupils to feel better about themselves
- 1 was not sure.

9.7 *Teacher/pupil relationships*

Overall, TENET members were less convinced of laptops significant effects on teacher/pupil relationships

- 4 teachers reported the use of a laptop as beneficial to the teacher / pupil relationship
- 1 was not sure if using a laptop made any difference to that relationship
- 5 teachers reported a laptop had made no difference.

However, the example of the secondary age Gypsy/Traveller boys, already described at end of 8.6 above, would suggest that perceptions of the relevance of teachers, and what they could provide, creates a desire within pupils to make the relational contacts necessary to support formal learning.

9.8 *Pupil/pupil relationships*

Similarly, these teachers were not convinced that using a laptop had had beneficial effects on pupil/pupil relationships

- 6 teachers reported a laptop as making no difference
- 2 teachers were not sure
- 2 teachers reported using a laptop helped pupil/pupil relationships.

However, a teacher reported the delighted incredulity of one child when she introduced the laptop and printer to a group of Gypsy/Traveller children.

Quote:

Gypsy/Traveller child: Are these really for us?

This example neatly summarised the research finding that, Gypsy/Traveller pupils and their families have low expectations of education authority support for their learning.

9.9 *Pupils' views of the impact of laptops on their experiences of learning*

Analysis of the qualitative data showed that pupils from both groups identified some important beneficial effects of using laptops. These views reflected the importance of having their family's interest and support in using a laptop or peripheral technologies as part of their education and also their own views on learning *per se*.

The majority of all pupils from both cohorts described feelings of enjoyment when using the computers. This is exemplified by the quote below, where significantly the researcher was interrupted by the pupil.

Quote:

PP: *So would you say you use it to learn to be good at it? Or just to....*

Pupil: *Nah, just to enjoy it.*

A number of pupils preferred using laptops for very personal reasons, for example the quote below reflects the kind of personal feelings of discomfort that limit pupils' attempts to complete learning tasks.

Quote:

Pupil: *I can't do hand writing and I cannae spell.*

PP: Ah, so if you use a computer is it easier for you?

Pupil: Aye.

PP: in what way?

Pupil: Egh ... with the writing.. cos I dinnae write it ...

PP: Ah that's the attraction isn't it?

Pupil: ... and your hands get all sweaty wi a pencil... I don't like that... it gets all sweaty.

Despite significant learning difficulties and low levels of literacy reported of some pupils, just one pupil described laptops negatively, remarking that "computers are crap". Others were clearly pleased with some of the laptops' features. One boy, for example, liked the fact that, "It has a spell check and that gets them right."

Families' interest and skills in laptops varied; while some pupils offered clear evidence of their family's pro-active support for their learning using a laptop or other computer, some parents were not able to help their children's learning.

One boy, attending an alternative centre was able to ask his mother (whose paid work involved daily use of a computer) and uncle (who had considerable experience of repairing computers) for support in his use of the computer,

Quote:

PP: How long have you had the computer?

Pupil: I had yin, an auld one I had for years. And I just got a new one two year ago... um this year in fact.

PP: And do you use it everyday?

Pupil: Aye, near enough, aye.

Evidence of interest in laptops and associated ICT among Gypsy/Traveller families also emerged. A pupil described her experiences of using a friend's laptop. She was asked about her knowledge and use of a laptop and went on to say that her friend's Granny had bought her friend a laptop as a Christmas present to help with her learning. She described how they played "... on the laptop a lot".

Quote:

PP: Did you both use it to play games?

Pupil: Yes and for my friend's homework."

PP: Does she go to school?

Pupil: Yes.

PP: Do you use it to play games?

Pupil: Yes

PP: Your face is all smiling at that... Do you use it to do school work?

Pupil: Yes.

Although her friend had left the site, she was reported to have gone to another site and to have moved to a third site, all of which the young Gypsy/Traveller could name as they had kept in touch by phone.

Pupils in both settings often introduced comments about their experiences of learning *per se*, frequently reporting, for example, that learning was more difficult in larger classes.

Pupils in alternative centres argued that teachers in mainstream schools had so many pupils to teach that it was difficult for a pupil to gain the teacher support to the extent that they needed in order to overcome their difficulties in learning.

Quote:

PP: *What makes it easier to learn here?*

Pupil: *Cos there's no so many people in the class and the teachers have got time for ye and they can help you mair.*

PP: *Yeah, so if you run into difficulties you can go and ask for help?*

Pupil: *Aye*

PP: *But couldn't you do that in your mainstream?*

Pupil: *Well I could dae that but, they dinnae gi ye as much, like, help, if ye ken what I mean, because they've got a big class ... do you know what I mean?*

PP: *Yeah ... so they just answer your question? They don't do a bit more than that?*

Pupil: *No*

PP: *Is that what you mean?*

Pupil: *Aye.*

Pupils gave examples of their difficulties in gaining confidence to learn the skills necessary for using a laptop or desktop computer. The pupil above, for example, reported feelings that stopped her from using one of the many available desktop computers,

Quote:

PP: *... Can you get on the machines? Is it that there is not one free?*

Pupil: *I can get on one but I'm scared in case ... I break it or something or do something wrong...*

PP: *You won't break a computer ... you think you would get into trouble do you?*

Pupil: *Nuh, I'm no bothered about if I get in trouble, but I just don't want to do something wrong with it...*

PP: *Yeah ... and feel a bit silly?*

Pupil: *Aye (she laughed)*

PP: *Is that what you mean?*

Pupil: *Aye ...aye.*

Gypsy/Traveller pupils found it easier to learn out of school largely because the noise level was lower. However, one 13 year- old Gypsy/Traveller girl's preference for learning on-site was for reasons of comfort, which exemplified most Gypsy/Traveller pupils negative feelings about going to school.

Quote:

PP: *Can you tell me why? (pupil preferred learning 'on-site')*

Pupil: *The school is six hours and it is boring ... and they put you out in the rain and that....*

We laughed.

Quote:

PP: *So it is not so comfortable at school? The work is not difficult enough (a reference to what the pupil had said earlier about the kind of work she had been given to do at mainstream school) and when it rains it is uncomfortable?*

Pupil: *(interrupted) Even if it is snowing or raining they'll put you out.*

PP: *Yes and you felt a wee bit cold did you?*

Pupil: *Yes.*

Pupils' feelings about returning to a mainstream school were strongly negative. The overwhelming majority did not want to go back to school, apart from one Gypsy/Traveller boy.

Quote:

Boy: *Well we will probably go back to (school x) and I'll probably go back to that school.*

PP: *Yes, and you would like to do that ... agh you're the first person who has said they would like to go back to school.*

Boy: *I wouldn't mind going back to that school because I know everybody in that school.*

PP: *So knowing people is important to get to learn ... you have to feel comfortable... is that what you are saying?*

Boy: *Yeah.*

One TENET teacher, however, responded to this point with the following view.

Quote:

Teacher: *... but when... if I've gone to the caravan and said, you know, "Can I take them up to the school?" (to parents), they (pupils) have said, "Oh can we go?" But they are happy here, they do enjoy this, but they would quite happily go to school I think. The ones in school want to go on ... the families are keeping them in their culture ...*

Other evidence of Gypsy/Traveller feelings about going to school reflects the broader cultural tensions experienced by Gypsy/Traveller in Scotland today.

9.10 *Attendance at school or in outwith school settings: effects upon teaching and learning*

One set of questions, which did not directly relate to using laptops, explored communication between base schools and pupils' learning in these outwith school settings (Padfield & Jordan 2002: 48- 52).

Teachers reported significant difficulties in keeping open communications with a pupil's base school, frequently because the school did not want the pupil to return. Pupils were not aware of any on-going communications about them between their current teachers and their base school.

Some pupils in alternative centres said that their parents did not want them to go back to school. Largely because parents felt their children were safer and better supervised at the alternative centre than they were at school. These concerns are echoed in Gypsy/Traveller families' concerns for their children's safety in schools (Lloyd et al. 1999b).

However, the following reports clearly indicated the extent to which pupils and teachers working in outwith school settings, distanced by location, are in effect professionally and educationally devalued.

Teachers in alternative centres reported that they were obliged to ask for information, about their pupils' achievements in public examinations, from the pupil's base school. In addition they considered that should an 'accommodating centre' be authorised as an examination centre, its name would appear on the examination certificate. In their view, people would recognise the 'accommodating centre' as a special initiative set up for 'disaffected' pupils, with the effect that the status of a pupil's academic achievement would be devalued by this information.

During qualitative fieldwork, the researcher was introduced to a Gypsy/Traveller, a 15-year-old boy who had never attended secondary school. The young man explained he had chosen not to attend school, he had learned to read, write and be numerate in primary school and considered himself sufficiently educated to join the adult world of Gypsy/Traveller and their work. He introduced the researcher to his mother who invited her into the trailer, where the younger son was playing an Asterix game on a laptop lent to his mother by her work place.

The mother was keen that her children and other Gypsy/Traveller children should have access to laptops. She expressed her belief that children could learn reading, writing and arithmetic through using the computer. Her family were knowledgeable about the Internet and how to access it via the telephone, but did not have access at present. She said that the following week they were expecting to receive a newer laptop. At that time they did not have access to a printer. The views expressed during this encounter demonstrated some Gypsy/Traveller interests in formal learning and in new technological ways of accessing the educational skills needed to participate in a modern society.

10. Conclusions

In 1998, the government signalled the seriousness of its intentions to develop information and communication technology (ICT) in education by allocating £230 million from the National Lottery to deliver significant resources to schools across the UK. £23 million of these funds were allocated to Scotland with the expectation of enhancing teaching and learning by ensuring that "... serving teachers feel confident and competent to teach using ICT within the curriculum..." (BECTA 2003b). Many local authorities have now introduced ICT policies that relate to developing skills (as laid out/stipulated in 5-14 ICT guidelines) (SEED 2000b).

By 2001, participants' in phases one and two of this research described schools as, "... awash with ICT". Academic research into the impact of provision and use of ICT in schools has raised questions about the pedagogical implications of its introduction into education (Conlon 2002; Conlon and Simpson 2002). The current debate is whether teachers should teach ICT as a discrete subject area or should ICT be used as a transformative educational tool by integrating its use in all subject areas. Evaluative research into its impact shows, "... teachers tending to use word processing and other 'task oriented' programmes while pupils were more creative and 'experimented' with the technology" (Condie 2002: 7).

Conducted within the context of debate about the role of ICT in education, this research examined four Scottish education authorities' provision of laptop computers and peripheral technologies to teachers working in two kinds of outwith school settings. First, with pupils being educated outwith mainstream schools after disciplinary exclusion or of being in danger of disciplinary exclusion, and second with Gypsy/Traveller pupils. In both cases, pupils from these populations characteristically experience significant degrees of interrupted learning (SEED 2003). Nevertheless, we found that other research findings that reported the learning benefits arising from pupil ownership and personalisation of the laptop (BECTA 2003b) did not apply to pupils from these two backgrounds in Scottish education. The lack of education authority provision of laptop computers to these pupils was based upon the education authorities' assumptions that they could not be trusted to keep them safely in their possession, a view generally endorsed by teachers and providers in all phases of the research. Other teachers and providers argued that taking the risk of providing laptops to such pupils would act as an important education authority signal to pupils of the worth of their learning.

The quality and appropriateness of curriculum materials has long been recognised as a significant motivator for learning, a matter of primary importance for many of our pupil participants. Thus, the main argument informing this research was that a laptop's portability, together with its multimedia capabilities, offered teachers working in outwith school settings, with such pupils, the potential to access attractive, appropriate and more specialised educational resources than is possible with more traditional materials (BECTA 2003b). Indeed, teachers participating in this research argued that in their experience 'better learning' achieves 'better behaviour', a view that reverses current official arguments that 'better behaviour' achieves 'better learning' (SEED 2001a).

10.1 *Implications of education authority provision of laptops, training in their use and peripheral ICT to teachers working in outwith school settings*

By definition, many of the pupils participating in this research were taught outwith traditional school buildings (the focus of lottery funded resources) which involves their teachers working in multiple sites. Our research found that some teachers did not have a choice (Bryce and Humes 1999) about integrating a laptop as part of their professional practice; laptops, technical support and associated ICT peripherals, such as printers and Internet facilities were not part of their everyday provision. In addition, the variability of provision to teachers from 'none at all' to relatively, (that is to schools) 'very good' provision, undermines the common perception that such pupils experience equality of opportunity to teaching and learning about ICT. The variability of laptop provision and poor levels of desktop computer provision, often shared by many teachers, also raised questions about the continuing professional development in ICT of teachers working in these settings (BECTA 2003a).

The quality and quantity of laptop provision to teachers was found to signal to these teachers and their pupils that their endeavours were not as worthy of formal recognition as their mainstream colleagues and peers. This finding was most evident in that teachers' reported their perceptions of generally being 'last in line' in terms of beneficial and innovative teaching resources, views that were reinforced by their experiences of having limited or no laptops and ICT peripherals to support working in outwith school settings. Thus, the main implication of our research findings viewed from the perspective of a continuum of provision from relatively 'very good' to 'none at all', was that such variations shaped and were reflected in teachers' and pupils' self-esteem, and their confidence in themselves as competent teachers and learners.

The variability of laptop provision to teachers supporting pupils with significant 'interrupted learning', undoubtedly limited their augmentative or transformative potential in the outwith school settings we examined. But, pedagogical arguments about use of laptops, that is, to teach ICT skills as a subject in its own right, or as a transformative teaching tool for responding to pupils' particular learning needs, were not found to be the key issues in these outwith school settings. Teachers with a laptop reported that it was one of many strategies they used to engage pupils' interest in problem solving; other kinds of technologies were reported as effective in engaging pupils' interest, to the extent that technical tasks were accomplished that both surprised and delighted the pupils concerned. Nevertheless, such teachers also reported that laptop provision had helped to augment their support for pupils, and had eased their administrative tasks.

In one education authority, teachers of pupils excluded from school described examples of pupils achieving exciting learning outcomes using laptop computers. However, teachers working in another education authority, reported that a special initiative to support significant numbers of pupils not attending school, had only been provided with one 'old desktop computer', of more than four years old (SEED 2000a; SEED 2000b), and one laptop for twenty-four staff and their pupils. Many of these pupils were educated literally outwith the building in which the initiative was located. Within the *same* education authority, other teachers working with pupils from similar backgrounds had been provided with adequate numbers of desktop computers, but no laptops to support pupils with significant interrupted learning.

In the case of Gypsy/Traveller pupils, some education authorities had been proactive in providing a teacher with a laptop, or had responded to teachers' requests for laptops. Generally, however, most education authorities' level of provision prevented teachers from,

- fully capitalising upon the capacity of laptops to transcend problems in providing high quality learning materials appropriate to the learning needs
- of Gypsy/Traveller pupils using ICT as an integrated aspect of their teaching, or, as a topic in its own right.

Gypsy/Traveller pupils' learning about and benefiting from ICT opportunities was significantly constrained within the limits of their teachers' duties. These included supporting the particular learning needs of a pupil population whose ages may range from three to sixteen, often in very limited spaces and often all at the same time.

In many cases, lack of appropriate curriculum software severely limited the extent to which teachers could support pupils' access to a continuous and coherent curriculum, a point that is highly significant for pupils who are grappling with the negative effects of interrupted learning (Jordan 2000). Some teachers reported that search engines, such as google.com, were blocked by the authority from their everyday use, thus restricting teachers' access to the Internet and its potential for finding websites that offered appropriate materials for pupils with interrupted learning.

Other cases showed an education authority's insensitivity to teachers hard won ICT skills and confidence in its use, for example an authority's decision to change from one platform to another had led to a loss of teachers' existing ICT knowledge. In addition to their loss of self-esteem, the time and financial costs involved in retraining had de-motivated teachers' attempts to re-train and use ICT in their teaching practices.

Certainly education authority provision of laptops to teachers was inadequate in terms of the hardware, software or ICT infrastructure and peripherals necessary for capitalising on a laptop's communicative potential for 'joined up working' with pupils, their parents or with other professional colleagues. Some teachers reported the negative, but unintended consequences of an education authority's gradual provision of different kinds of servers for different levels of staff, which had resulted in practical difficulties in communication between servers that effectively, teachers could not 'talk' to each other. Other teachers reported that they shared an email address, which they were not designated to open. Inadequate provision of email addresses to staff had limited their ease of communication, particularly between teachers and parents or others with relevant and legitimate inquiries to make of the teachers, for example regarding pupils' learning needs.

Such situations suggest that the level and reliability of provision of ICT in outwith school settings to teachers and pupils is not adequate to ensure effective and efficient use of existing provision. Certainly, such teachers and pupils are a long way off having access to ICT as a necessary tool for 'learning to succeed' as envisioned by Wood for classrooms in 2015 (Wood 1993: 299-314).

Despite limits of ICT provision to teachers described above we found evidence of excellent innovative development of a laptop's potential by some teachers, in both settings. In contrast to Condie's findings above, in both settings, some teachers had developed their ICT skills by adapting and extending existing software for their pupils' particular learning needs. Although limited by the few available laptops and professional time allocated to the task, a few teachers reported offering some educational support to Gypsy/Traveller families (BECTA 2002a). Within these varying contexts of laptop provision, pupils themselves generally described their enjoyment and the positive effects upon their learning of using their teachers' laptops. The data also shows examples of pupils' achieving and developing their ICT skills that correspond with Condie's findings. Some Gypsy/Traveller pupils, for example by putting their own and their teachers' skills to innovative use demonstrated that laptops, supported by peripherals, had relevance to their lives outside formal learning.

10.2 *'Interrupted learning' - across the specialist/generalist divide*

The analysis of teachers' and pupils' experiences with laptops showed not only that education authorities varied in their provision of laptops, but that such provision was *ad hoc*. Our research methodology involved developing research questions with teachers, which were designed to shed light on what they were able to teach through their use of a laptop and how they taught pupils with a significant range of learning needs. Teachers' responses to these questions reflected that an underlying debate informs education authorities' approaches to the organisation of support services for pupils in outwith school settings. These approaches can be summarised in terms of a generalist versus a specialist services approach.

Some teachers reported their experiences of education authorities offering a discrete service approach to provision for a range of pupils experiencing difficulties in learning. Data from the earlier phases of this research showed that a discrete service approach does not provide the necessary flexibility for overcoming the negative effects of 'interrupted learning'. Indeed, data suggested that a discrete services approach could amplify the difficulties faced by teachers and pupils in accessing appropriate support for learning. Examples were given of the impact of official requirements that pupil referrals for ICT support for learning must be identified by a 'main difficulty'. A provider described the case of a pupil initially identified as having dyslexic type difficulties, who over time had been re-identified as having 'behavioural difficulties'. This shift was argued to have resulted from the boy's attempts to cover embarrassment about his learning difficulties in front of other boys. The impact of being re-identified resulted in his loss of the necessary ICT provision to help him cope with the effects of dyslexia on his learning. Another pupil's placement in a special initiative was found to have resulted in the pupil's loss of previous ICT provision of an Alphasmart, access to email and to the Internet.

However, across all three phases of this research evidence was provided that alternative provision inevitably carries the stigma of a *special initiative* for 'pupils with problems'. Teachers' reports clearly indicated that pupils and teachers working in outwith school settings, distanced by location, believe that they are professionally and educationally devalued. The specialist approach, underpinned by budgetary conditions that limit the degree of flexibility within its organisational

arrangements, was reported as frequently resulting in the negative labelling of the very pupils it is designed to support, and, by association, their teachers

Other teachers reported an initial endorsement of a specialist approach that had shifted after a positive experience, which had resulted from official decisions to reorganise provision from a discrete service (EAL) to a linked specialist and support service (EAL and support for learning team). The impact of that particular official decision, showed teachers that there were problems common to both services that could be tackled more efficiently and effectively than was the case within a separate specialist context.

The research also encountered cases where it was not thought necessary to provide specialist training and qualifications for teachers doing such specialist teaching; for example, there are no specialist qualifications necessary for being a teacher of Gypsy/Traveller pupils. A post is advertised and the successful applicant immediately becomes a teacher of Gypsy and Traveller pupils, who then learns how to support them through doing the work. Such teachers rely heavily on other more experienced teachers in other education authorities for guidance and support, through their membership of TENET. Thus, TENET affords a form of Continuing Professional Development.

However, such teachers report variations in their official remits. Some teachers only teach Gypsy/Traveller learners, some teach Gypsy and Traveller learners, some teach Gypsy/Traveller learners in association with another pupil population, such as EAL, others are teachers of Gypsy/Traveller pupils and are also learning support teachers in schools. Teachers and Community Education workers designated to support Gypsy and Traveller education frequently find themselves professionally isolated as their official remit leads to their working in a variety of settings with a fragmented timetable. On a day-to-day basis, teachers of Gypsy and Traveller children do not experience their working practices as embedded in the broader education authority services. This practice of split duties was also found among teachers working in alternative centres.

Nevertheless, across these different teaching arrangements the same issues regarding Gypsy/Traveller children emerge. How to support Gypsy/Traveller pupils' educational endeavours within the context of unplanned moves and frequently a lack of positive local community support. Some schools can successfully integrate Gypsy/Traveller children. Craigpark School's excellent HMI report on integration of a Gypsy/Traveller pupil population has been achieved without any involvement of designated peripatetic teachers (HMIE 2002:52-59). Such results have been made possible through the establishment of a supportive school ethos and by working co-operatively with Gypsy/Traveller parents and children. Our research has also shown that some Gypsy/Traveller pupils are interested in relevant and appropriate learning and value the provision of laptop support.

Some teachers' experiences led to arguments that support provision, including ICT, be organised in a way that is accessible for all children experiencing significant difficulties that inevitably interrupt the coherence and continuity of formal learning and teaching. This view directly resonates with a fully generic approach to supporting children 'outwith school', in order that this particular example of the digital divide can be remedied (BECTA 2002b). During the research process, a number of special support initiatives that draw directly upon

