Multisensory Environments:

The use of interactive technology in effective pedagogy with learners who have severe and complex forms of special educational needs.

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Acknowledgements

This research project is the second phase of a longer project, which will conclude, with the publication of an interactive CD-ROM. There are numerous people I would like to thank but especial thanks must go to Dr Jill Porter for her ongoing support and guidance. Thanks also to the staff and pupils of the case study schools and to Dr Jenny Corbett for her diligent reading and re-reading of various drafts and her invaluable comments. I would also like to thank Terry Waller and Chris Stevens of the British Education and Communication Technology Agency (BECTA) for having faith in the idea in the first place. Finally, last but not least, thanks to my secretary Sylvia Franklin-Kitchen for keeping me on the right track!

Research Abstract

The aims of this research are threefold. They are: to examine the use of interactive technology by teachers working with a low incidence population within the defined context of multisensory environments; to identify case studies illustrating good practice in the use of interactive technology; to develop guidance materials for further dissemination. Two approaches are used in the collection of research data for this study: focus group interviews and illustrative multi-case studies (filmed using digital technology).

This research highlights the use of interactive technology amongst a very low incidence population by teachers who are often practitioners working in isolation. The rationale for the choice of methodology therefore rests on the need to canvass views nationally and ethically within a relatively short and cost-effective timeframe. The use of digitally filmed illustrative case studies provides the additional advantage of dissemination through the Web.

Outcomes:

A framework has been developed which brings together good practice within both mainstream and specialist provision. Case study material is set against this framework and illustrates its key components.

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Chapter 1

Research Aims

Research Aims

The aims of this research are:

- To examine of the use of interactive technology by teachers working with a low incidence population within the defined context of multisensory environments.
- To identify Case studies illustrating good practice in the use of interactive technology.
- To develop guidance materials for further dissemination.

As a first step towards these aims a group of practitioners working with learners who have severe and complex forms of need were invited to be involved in the research. Those practitioners involved in the study have been chosen in recognition of their knowledge and experience of the use of interactive technology within such environments.

Multisensory Environments

Multisensory environments are a focus for this research because they are commonly used within specialist provision for learners with severe and complex special needs. There is also the first glimmer of their use in more inclusive forms of mainstream provision. In spite of government rhetoric and the very positive developments in inclusive pedagogy, the development of more sophisticated technology (hard and software) within the mainstream of education has often failed to permeate the classroom experience of many children with severe and complex needs. However, where technology seems to have gained more prominence, is within the context of the multisensory environment.

Chapter 2

Key Research Questions

Over the last decade or so much fundraising has been targeted towards the purchase of multisensory environments. But the following questions arise which the research hopes to address:

- Who uses them and (more importantly) why?
- Do they benefit the learner or do they act as reassurance for staff that something productive can be done for their most challenging students?
- Is their use supported by a sound pedagogy?
- What is included or excluded from a multisensory environment?

There was also the need to define concepts of technology and interactivity. The three aspects of technology identified by Bozic and Murdoch (1996) in their introduction to 'Learning Through Interaction' provided a helpful guide to concepts of technology:

1. Working with microcomputers
2. Learning in technological environments
3. Technology as a personal tool

Following the Teacher Training Agency (TTA) Framework for ICT in its Initial Teacher Training National Curriculum (1999) and the importance of interaction within the context of multisensory environments specific consideration is given in this research to:

The interactive way in which information is stored, processed and presented to provide rapid and dynamic feedback ("interactivity") which itself has further functions:

1. exploration of models and simulations
2. communication
3. presenting information

As a starting point it is hypothesised that effective pedagogy and ICT might be conceptualised as:

- An in-depth knowledge of the use of interactive technology within specialist teaching and learning environments.
- The creation of innovative solutions to pupils' complex needs.
- The development of whole school policies which guide teachers in the use of multisensory environments across the curriculum and in meeting what are considered the priority needs of individual learners.

However a further overarching question arises which needs consideration:

- How can mainstream developments in the use of technology be better harnessed for learners with complex and often profound disabilities?

There are two approaches used in the collection of research data for this study. In order to harness the views of the practitioners involved in the research the use of focus group interviews has been chosen as a starting point. The second approach involves the development of illustrative multi-case study material. This approach gives the opportunity for an examination of a wide range of contexts and views. As a component of the case studies the use of semi-structured interviews with case study staff allows for the collection of supplementary data which can then be used in conjunction with the views of focus group members. Interviews were recorded using digital technology, were transcribed and then analysed using discourse analysis. Discourse analysis involved the use of thematic coding to draw together themes and sub-themes from focus group responses and case study interview data.

Chapter 3

Multisensory Environments

Multisensory environments are regarded as an important resource in the education of children and young people with profound and complex needs. Teachers have highlighted an enormous number of uses of such environments. These include:

- Simulations and dramatic reconstructions carefully planned and directed by staff in order to create access for mixed groups of pupils to various areas of the curriculum such as science, history or geography;
- Opportunities for pupil-led exploration, investigation, problem-solving and discovery;
- A means of promoting pupil self-awareness and empowerment;
- A context for the development of sensory awareness, an understanding of cause and effect, and skills in environmental control;
- A resource used by professionals in support of assessment and pupil profiling;
- Individual therapy and relaxation.

(Byers, 1998)

Specific claims concerning the beneficial effects of multisensory environments have also been made (McConnachie, Carlson, Kemp and Smith, 1994). Some of what might be considered key claims are listed below:

- The development of hearing, sight, taste, smell and touch
- Hand and eye-cordination
- The development of language
- Relief of tension and of hyperactivity
- The promotion of a receptive mental state
- The reduction of challenging behaviours
- Increased motivation

Whilst a large body of such anecdotal evidence exists there has been very little empirical research focused on the use of multisensory environments within the context of education. In one such study Bozic (1997) interviewed sixteen members of staff from schools using multisensory environments and then, using discourse analysis, he concluded that there were two approaches to their use. The first of these he termed *the child led repertoire* whilst the second he considered *a developmental repertoire.* These two approaches are distinct from each other but different staff may view the same activity using a different repertoire.

Bozic highlights the following differences between these repertoires:

The child-led repertoire shares many of the characteristics with the adult-orientated use of multi-sensory rooms. The room is presented as a comfortable, relaxing place in which children are able to make their own decisions about the activities they become involved in.

School staff also used the developmental repertoire. This repertoire was distinct from the child-led repertoire and could not readily be combined with the language of the child, decision-making and relaxation. Instead it focused on a developmental view of the child progressing through stages and levels... Children were sometimes seen as being in control, but of equipment rather than social activities. (p.57)

Bozic's work points to the complexities facing teachers when planning individual programmes with pupils. On the one hand there is a genuine wish to facilitate a responsive environment which encourages communication between teacher and pupils but on the other hand, without due regard to the outcome (through monitoring and evaluation), such interactions may appear as isolated instances within the child's daily experience of education.

Although this project will focus attention on the use of interactive technology (both low and high tech solutions) within the context of multisensory environments, Bozic's findings provide a useful warning.

Bozic's final sentence in particular flags up the danger of a too simplistic view of the use of equipment:

Children were sometimes seen as being in control, but of equipment rather than social activities. (p.57)

Pagliano (1997) echoes this:

The dependence on information and communication technology for all sections of the community means that it can only increase... Used inappropriately, they (technological devices) can frustrate, waste time and money, dehumanize interactions and generally be counter-productive. (p.149)

Mount and Cavet (1995) take the argument further in relation to multisensory environments:

There is danger, too, that in the absence of rigorous research the value of multi-sensory environments will be over-estimated and, in the present situation may be perceived as active treatment centres when, in fact, the are being used for containment, or as a dumping ground where people with learning difficulties are placed and ignored. At best, a multisensory room can increase the alternatives available to people with profound and multiple difficulties and staff. At worst it may divert the attention of staff from recognizing the potential for sensory stimulation in everyday environments and can

provide an unstimulating and incomprehensible setting for people with learning difficulties...(p.54)

Chapter 4

Multisensory Environments: Definitions

Multisensory environments are many and various. Most forms of specialist provision for learners who have complex and/or sensory needs will have some form of dedicated space for multisensory stimulation. A paper produced in 1998 by Richard Byers explored some of the terms used:

- *Some used a variety of terms (sensory studio; interactive light and sound room; white/light/dark rooms; visual assessment room; multi-sensory room; sensory suite, sensory area') to describe the facilities in their schools*...(p.28)

Pagliano (1997) gives the following definition:

The new multisensory environment is a dedicated space or room for relaxation and /or work, where stimulation can be controlled, manipulated, intensified, reduced, presented

in isolation or combination, packaged for active or passive interaction, and temporarily matched to fit the perceived motivation, interests, leisure, relaxation, therapeutic and/or educational needs of the users. It can take a variety of physical, psychological and sociological forms (p.11).

Mount and Cavet (1995) offer a further definition:

Multi-sensory environments are a collection of devices or objects which have been assembled with the aim of offering stimulating or relaxing experiences to people with very severe intellectual disabilities...(p.52)

Pagliano (1999) describes the range of equipment commonly found in such environments:

A variety of equipment is on hand to provide visual, auditory, olfactory, tactile and kinesthetic stimulation. These stimuli include a wide range of pleasant aromas, soothing music, vibrating cushions, tactile wall panels, wind chimes, wooden flying birds, beanbags, a water bed, a ball pit...(p3)

Byers (1998) stresses the need for a range of options "*including 'natural' and 'incidental' resources*" (p.29) with an aim that "anywhere can become a sensory environment".

Considerations

Holt (1993) gives a useful aide memoir when considering technology:

- What exactly does this equipment do?
- What are the aims of its use?
- Are there cheaper alternatives?
- Will it suit the needs of a range of users?
- How safe is it?
- Are instructions available and are there courses in the use of the equipment?

It was also important to recognize the issues raised by Mount and Cavet (1995):

How carefully do organizations consider the need for setting up a multi-sensory environment, and what criteria are used?

What influences the choice of equipment?

Is the installation of such an environment compatible with the integration of pupils in a school setting of the philosophies of normalization and social role valorization in adult settings?

Could alternative *everyday* curriculum or community experiences be offered which would generate similar responses or have similar appeal?

How is the effectiveness and relevance of such an environment monitored and evaluated over the short and long term?

How are individual responses and progress recorded and developed?

Could the money spent have been allocated to other ways of improving the experiences of children and young people with learning difficulties?

How are members of staff trained in using such environments to support the young people concerned?

Chapter 5

Context of this Research

National Context

Developments in Information and Communications Technology are opening up educational opportunities previously denied to pupils with SEN...ICT should be used to give children with special educational needs maximum access to the curriculum, and to help them reach their learning potential.
(Excellence for all children: Meeting Special Educational Needs, p.21, DfEE: October 1997)

The specific emphasis of this research can be located within two strands of policy implementation. Both of these strands arose from the Green Paper on Special Needs, *Excellence for all children: meeting special educational needs (1997).* The first of these is highlighted within 'Meeting Special Educational Needs A programme of action' (1998) which makes reference to special needs and technology through the action plan's drive towards more inclusive practice within education. Initiatives include the National Grid for Learning and encouragement for special schools to apply for technology designation.

The second strand of policy implementation relates to the publication of 'National Special Educational Needs Specialist Standards' by the Teacher Training Agency in December 1999. The production of Specialist Standards is the latest in a long line of initiatives covering the training and development of the teaching profession. These Standards continue with the emphasis on inclusion highlighted in the 1998 'Programme of Action' by aiming to '*achieve successful inclusion of pupils with SEN by securing better training for teachers working with pupils with SEN.'(p.2)*

The TTA document is divided into two main components. These components cover 'Core' and 'Extension' Standards. The Core Standards identified within the document are listed under five headings. There is also what is described as Extension Standards. These Extension Standards relate to more specific forms of SEN. Therefore these 'National SEN Specialist Standards' are meant to have especial relevance for teachers and managers who work with learners who have severe and/or complex SEN and are considered by the TTA to identify the key skills necessary *'for consolidating learning and securing access to knowledge'* (p.2). This emphasis on working with learners who have severe and/or complex forms of SEN distinguishes the Specialist Standards from those which the TTA produced in 1998 for Special Educational Needs Co-ordinators (SENCOs). The fourth heading of the specialist Core Standards is most germane to this research: the *development of communication, literacy and numeracy skills, and ICT capability.*

Heading four is subsequently sub-divided in the text into six components which bring together the *'physical, linguistic and psychological aspects of communication' (p.12)* within the context of curriculum access. Although ICT in relation to pedagogy is presented through the acquisition of literacy, numeracy and study skills, an examination

of the text does indicate that a more ecological approach is recognised as important for learners who are unlikely to acquire literacy or numeracy in a traditional sense. These learners may be functioning below the levels determined within the current model of the national curriculum. Indicators of effective pedagogy for this group in relation to ICT, as expoused in TTA documentation suggest that teachers should

- *know and apply the effective pedagogy relating to the teaching of literacy, numeracy, ICT and study skills, and relate these to the needs of pupils with severe and /or complex forms of SEN*
- *make effective use of first hand experience and contexts beyond the classroom to help pupils to understand the importance of literacy and numeracy skills and ICT capability in everyday living.*

Although this project focuses on effective pedagogy within the context of multisensory environment, it is also important to look across the wide range of indicators of effective pedagogy described in the specialist Standards. 'Effective teaching, ensuring maximum access to the curriculum' is the third component of the five elements of the Core Standards. Clearly pedagogy is broader than a narrow descriptor relating only to teaching and in fairness TTA documentation does take more than a superficial approach. However, one of the difficulties highlighted by the rather instrumental approach demonstrated in texts such as the Specialist Standards documentation is the absence of any theoretical framework. This lack of a conceptual or theoretical framework could possibly lead to a more reductionist view of teaching by teachers and their managers. It is hoped that the outcomes of this research will go some way in providing guidance on the development of a framework in relation to multisensory environments and the identification of effective pedagogy.

The five elements of the TTA Core Standards are:

a) *strategic direction and development of SEN provision nationally and regionally;*

b) *identification, assessment and planning;*

c) *effective teaching, ensuring maximum access to the curriculum*:

d) *development of communication, literacy and numeracy skills, and ICT capability;*

e) *promotion of social and emotional development, positive behaviour and preparation for adulthood.*

Underpinning the third element of the Core Standards (c) are a further ten sub-divisions. From discussion with TTA Officials and their Consultants it was possible to gain some insight into the development of the process which resulted in the creation of this section. A process of distillation generated both the overarching theme and its sub-divisions. This process began with an examination of documentation provided to the Special Educational Needs Training Consortium and presented in their report to the DfEE: *Professional Development to Meet Special Educational Needs (1997).* Distillation also continued via discussions with the TTA focus group concerned with special needs as well as feedback from consultation documents, conferences and the National Advisory Group on Special Needs (NAGSEN). Such discussions paralleled other TTA initiatives aimed at gathering illustrative case material.

Of particular importance to this study is the fact that effective pedagogy became the focus for a TTA funded research project conducted in 1999 by the Universities of Newcastle and Durham. This project looked at effective pedagogy in the use of ICT in literacy and numeracy in primary schools. The information from the TTA project offered the

opportunity for some direct comparisons between the uses of ICT in specialist and mainstream provision and made it possible to identify ways of determining how developments in the use of mainstream technology could be better harnessed in relation to pupils with profound and complex needs.

The SEN Standards are not without critics, many of whom feel that the documentation will not be easily applicable to making judgements about a teacher's performance. In an attempt to respond to this criticism the TTA have recently (March 2000) produced guidance on using and applying the SENCO Standards (this move signals the likelihood of a similar approach in relation to specialist Standards). Whilst debate continues over the application of TTA documentation in the field of SEN it seems opportune to return to the descriptors of effective pedagogy provided in their text. It is evident that the ten sub-divisions described are, in reality, interwoven and inter-dependent:

- *a detailed knowledge of the school curriculum, including approaches to National Curriculum requirements, and the use of assessment criteria, to develop, adapt and evaluate teaching strategies and content within the curriculum, and know how to maximize their benefit to pupils with SEN;*
- *understand the implications of the revised National Curriculum statement on inclusion and the QCA curriculum guidance which sets the National Curriculum within a wider context;*
- *analyze complex sequences of learning and set, smaller, but more appropriate, achievable targets for pupils whose progress is not clearly demonstrated when set solely against more conventional assessment criteria;*

- *identify individual learning outcomes and develop, implement and evaluate a range of approaches, including, for example, task analysis, skills analysis and target setting, to help pupils achieve those outcomes in a variety of settings;*
- *explore ways of reducing barriers to learning which arise from a major physical, intellectual, emotional, social or sensory impairment, and understand how these may change in childhood and adolescence or in response to learning experiences and opportunities;*
- *encourage pupils to become more independent learners by sequencing and structuring learning experiences and the learning environment so pupils develop organizational, information processing and problem solving skills;*
- *adapt and modify teaching and pupil resource materials to suit pupils' maturity levels and learning styles so that pupils are given every opportunity to understand concepts and ideas;*
- *use, manage efficiently and evaluate relevant specialized aids and resources including when appropriate, ICT, to give greater access to the curriculum and to assist in the promotion of independent living skills.*
- *Take account of the effects on learning and behaviour of medications, medical treatments, and therapeutic regimes, including those which necessitate periods of absence from the classroom; and, when needed, make adjustment to targets and the management of individual learning;*
- *Work collaboratively with specialist and non-specialist staff, to make effective use of teaching and learning environments including specialized environments, e.g. hydrotherapy pools or sensory rooms.* (p.4)

These descriptors are compared in this research to features of effective pedagogy and the use of ICT presented as outcomes of the TTA (1999) study:

- *clear identification of how ICT will be used to meet specific objectives within subjects of the curriculum to improve pupils' attainment;*
- *ensuring that pupils have adequate ICT skills to achieve subject specific objectives;*
- *a planned match of pedagogy with the identified purpose of ICT activities and learning outcomes (e.g. by the teacher's use of ICT to demonstrate or model learning rather than for pupil use);*
- *matching starting points for development for particular teachers in accordance with their preferred teaching styles and approaches;*
- *adequate access to and intensity of use of the necessary equipment by pupils and teachers;*
- *effective technical back-up and support to overcome any difficulties encountered and the provision of adequate resources.*(p.97)

By looking across both sets of descriptors of effective pedagogy it becomes clear that there are strong links between the two. Both lists emphasize the importance of a balance between expectation and context. Key assumptions around matching pedagogy with outcome, which are embedded within the TTA research, are also integral to TTA specialist Standards.

The interactive model presented by the TTA (1999, p.14) research can thus be considered to relate to all pupils and as such is very much an inclusive model:

A key assumption of the model is that the actions and behaviours of the teacher and the learners in a particular context directly influence learning outcomes.

This model is supported by reference to other research on teacher effectiveness summarized by the TTA research team.

To summarize, the research literature suggests the effective teacher:

- *informs learners of lesson objectives*
- *provides learners with an organizing structure*
- *checks for prior learning relevant to the task at the beginning of the lesson*
- *gives directives slowly and distinctly*
- *knows the current attainment levels of pupils*
- *uses examples, illustrations, and demonstrations to explain and clarify*
- *provides a summary at the end of each lesson*

(p.xv)

Although the TTA specialist Standards are referenced to a population with complex needs, the outcomes of the TTA mainstream research project could easily be seen as another layer of extension Standards in relation to ICT. The outcomes of the TTA therefore provide a much-needed link between effective pedagogy in relation to typically functioning populations and those with complex needs. Within the context of the government's drive towards the use of ICT within a more inclusive context it is heartening to see evidence that there do seem to be shared perceptions of what constitutes

effective pedagogy both in government guidance for specialists and outcomes in the mainstream classroom.

Where there may be differences in teacher behaviour with regard to a population with complex needs they are likely to be related to the specific choice and combination of teaching strategies used. For instance, specialist strategies may well need to be employed to provide augmentative forms of communication that will facilitate interaction between teacher and pupil and pupil and task. However, the same fundamental principles remain in common. These are recognized in the TTA research:

Research indicates increased pupil achievement from the use of a variety in instructional materials and techniques, the frequency and variety of reinforcement used, and types of feedback given to pupils (Brophy & Good, 1986). In terms of ICT, the use of technology clearly adds to the range of approaches (e.g. using an Integrated Learning System) and to the variety possible within a particular approach Effectiveness is therefore the appropriate choice of approach to match a particular context. (p.xv)

This view of teacher effectiveness and the need for a broad range of strategies is noted also in research, which focuses on complex needs. Porter, Miller and Pease (1997) identified that:

On average teachers drew on some 30 strategies although there was considerable variation between teachers which could not simply be accounted for by differences in specialist training. (p.72)

Porter, Miller and Pease go on to posit a range of factors:

A variety of within-child factors were considered as well as those relating to the environment, thereby reflecting the need for teachers to consider individual (and often idiosyncratic) characteristics such as pupils' interests and motivation together with Specific constraints of the environment, such as the availability of staffing or space.

Chapter 6

The Client Group

The main use of multisensory environments within an educational context rests with those who work with learners who are unlikely to access the National Curriculum at chronological equivalents. Such learners may continue to operate at early developmental levels throughout their lives. It is therefore important to make clear the underpinning assumptions about the client group addressed in this study. These are that they have:

- A need for enhanced or augmentative forms of communication.
- A need for enhanced or alternative input through sensory modalities.
- Access to greater environmental control by access to appropriate forms of technology.

By far the largest percentage of these learners is likely to suffer some form of sensory impairment. Research conducted for the DfEE by Porter, Miller and Pease (1997) found that in a population described as deafblind the following changes had occurred:

During the past 20 years, the needs of the population considered deafblind has undergone considerable change...Whilst the incidence of Congenital Rubella Syndrome

has diminished there has been an increase in the number of children born with dual sensory impairment resulting from genetic syndromes or associated with cerebral palsy after perinatal or neonatal insult. (p.2)

Other research (Griffiths and Best, 1995) suggests that at least 20% of the population of schools for pupils with severe learning difficulties have significant visual impairments. Research from the Royal National Institute for the Blind (1996) indicates that 30-40% of pupils on the caseload of services for visual impairment has additional disabilities. An examination of the population of two special schools catering for pupils who are visually impaired supports this notion.

Table 1: Percentage of visually impaired pupils with additional disabilities n=108

RNIB, 1996

Additional Disabilities	**Percentage of Population**
Physical	37
Hearing impairment	26
Speech/Language	68
Behavioural/emotional	49
Severe Learning Difficulties	75
Number of Additional Disabilities	
1 or 2 additional disabilities	21
3 additional disabilities	30
4 or more	49

The majority of learners considered in this study are therefore likely to exhibit a range of disabilities including cortical visual impairment and cerebral palsy. Cortical visual impairment. (CVI) refers to visual impairment due to damage to the visual cortex, the

posterior visual pathways or both (Groenveld, 1994 p.3). Groenveld goes on to indicate that 80% of children with CVI will suffer from cerebral palsy, 60% from epilepsy, 20% from hydrocephalus and 10% from deafness. Eighty per cent will also be considered to have severe learning difficulties. Most will be described as learners with profound and multiple disabilities (PMLD) or as having multisensory impairments (MSI).

Chapter 7

Multisensory Environments: The Literature

There is rather a complex history behind the development of multisensory environments. Part of this complexity arises from the variety of routes that culminate in what are now described as multisensory environments. Most information points to the Snoezlen leisure facilities in Holland as the primary influence on what are now described as multisensory environments but other developments in the external environment focused attention on sensory stimulation. One of the most influential of these developments was the emergence of humanistic psychology during the 1950s and 1960s:

The concern of humanistic psychologists was to do justice to people's conscious experience of themselves and their role in directing their own lives. They wanted to emphasize people's capacity for self-awareness, that they have the power to choose...Because it represented essentially a reaction to the prevailing traditions of the time, humanistic psychology was sometimes termed the `third force'.

(Stevens, p.419, 1990)

Changes in legislation during the 1970s had opened education to those previously deemed 'ineducable'. More awareness of the developmental process underpinning vision

and hearing started to permeate education as peripatetic services began to meet this new client group. Clinical methods were also being developed which allowed clinicians to assess those children with little or no verbal communication and limited mobility (Atkinson and Van Hof-Duin, 1993). There was growing awareness of delayed visual maturation amongst some children with neurological impairments. In these cases vision developed even after an initial diagnosis of blindness (Jan, 1993). Staff training improved with the introduction of specialist courses in severe learning difficulties (Miller and Porter, 1994). Parents began to play a more influential part in their child's education and home/school links were formed which emphasized partnerships between home and school. Overall expectations were raised about what should be possible and available for children with multiple disabilities.

However, some children were so profoundly disabled that the benefits of a typical classroom based school environment did not easily reach them. Physically isolated by their equipment needs and their communication difficulties these children challenged the system. Parents and professionals sought to find ways of engaging such children in a world outside their own bodies. Ware (1996) describes the need for a responsive environment in all our lives but highlights its importance for this profoundly disabled client group:

By a 'responsive environment' we mean an environment in which people get responses to their actions, get the opportunity to give responses to the actions of others, and have an opportunity to take the lead in interaction. (p.1)

As different and sometimes experimental approaches to the curriculum emerged, multisensory environments began to appear on school timetables. Usually they were not linked to any particular area of the curriculum but appeared under the broad heading of

'stimulation'. The introduction of a national curriculum focused attention on the rationale behind areas of the curriculum and the methods used for monitoring and evaluating progress. This brought into stark relief the sometimes-unclear basis for the use of multisensory environments and the wide range of approaches to the monitoring and evaluation of the outcomes for the young people involved. Byers (1998) identifies three underpinning approaches to curriculum planning and the use of multisensory environment based on:

- A specialized 'sensory curriculum';
- Access to subjects and other aspects of the whole curriculum (including a national curriculum), which may be differentiated in order to provide a 'sensory dimension';
- And/or progress towards pupils' individual learning priorities, some of which might be described in terms of 'sensory targets'. (p.29)

McClarty (1993) describes the addition of two multisensory rooms to school facilities and their different purposes:

One room offers an interactive experience, which is just right for some of our busier, more enquiring children containing equipment that must be operated by touch or voice to get a reaction. The room provides simple problems and instant, enjoyable rewards....

In the other room, the White Room, the emphasis is on relaxation and passive enjoyment.... (p.12)

However, in order to put multisensory environments within an underpinning framework it is necessary to look closely at the impact of humanistic psychology.

Chapter 8

Towards a framework: The Impact of Humanistic Psychology

Multisensory environments contain very similar equipment to that found in the average nightclub. Flashing lights and powerful sound systems are part of everyday disco paraphernalia and are also the everyday tools used in multisensory environments. But how did this happen and why should multisensory environments look as they do? What is the underpinning psychology or philosophy behind their use? One possible answer is that multisensory environments were not created to meet the needs of a population with profound and complex forms of special need but out of an interest in altered states of consciousness by a mainstream population. Altered states of consciousness were a key area of interest for the humanistic psychologists. It is therefore surprising that the role of humanistic psychology in the creation of multisensory environments has been much overlooked in the literature surrounding them.

Humanistic psychology had become a distinct movement during the 1950s and *was essentially an orientation to the study of mental life rather than a `school' of psychology.* (Stevens, 1990, p.419). The influence of humanistic psychology reached a post-war

generation anxious to create a better future. It brought together influences from European and eastern philosophies. The impact of postmodernism had begun to challenge perceptions of the individual and their role in society. The old order was fading into something less certain. The experiential approach favoured by humanistic psychologists matched the mood of the time. Uncertainty became a basis for personal exploration. There was more acceptance of individual difference and diversity.

Humanistic psychology drew together a wide range of professionals such as Carl Rogers a proponent of psychotherapy and the so-called `progressive' educationalists such as A.S.Neil. What they held in common was a belief in the potential of the individual. Although much criticized by successive governments there is little doubt that `progressive' education influenced teacher training during the 1960s. Humanistic psychology can be seen as providing a counterbalance to the earlier influence of models of teaching and learning based on the natural sciences (Shipman, 1985). A recognition of diversity combined with a growing belief in human potential led naturally to a re-examination of the treatment of those previously marginalised by the education system:

...Meanwhile from around 1950, in a field previously dependent on medical knowledge and interest, psychologists appointed to mental deficiency hospitals ...began to publish findings which demonstrated that the mentally handicapped could learn under appropriate conditions...(Gulliford, 1988 p.37).

Members of the current teaching force working with learners who have complex and profound needs draw their teaching strategies from diverse roots. The continued presence of approaches based on top-down and bottom-up models of teaching at the very least increase the pedagogic repertoire of the teacher. As the needs of learners with multiple

disabilities have become even more complex, educationalists have increasingly drawn on developmental and experiential approaches. Within this context the five central themes or principles of humanistic psychology have particular relevance. This is not only to the creation of what we now describe as multisensory environments but can be also seen to underpin many approaches to the education and care of those learners with profound and complex needs which still predominate today. These five central themes are:

1. *Humanism is strongly phenomenological or experiential: its starting point is conscious experience.*
2. *Humanistic psychology insists on man's essential wholeness and integrity.*
3. *Humanistic psychology while acknowledging that there are clear-cut limits inherent in human existence, insists that human beings retain an essential freedom and autonomy.*
4. *Humanistic psychology is antireductionist in its orientation.*
5. *Humanistic psychology, consistent with its strong grounding in existentialism, believes that human nature can never be fully defined.*

(Shaffer, 1978 pp.10-17)

Richard Stevens (1990, p.60) has summarized these five principles. The summary has been annotated to demonstrate how these principles might be considered to apply to the work undertaken with the client group addressed by this research. These are:

- Conscious awareness – this aspect is seen by Stevens to be manifested through the experiential or the phenomenological approach and is a possible rationale for the use of sensory stimulation. This links closely with the developmental models at the heart

of much of the assessment and planning used with pupils with complex and profound needs.

- Personal agency and growth – the importance of being able to exercise freewill and choice is an important focus for much of the work undertaken with learners who have profound and multiple disabilities and links with concepts of self-advocacy.
- The holistic approach - in terms of work with a population where communication is largely at a pre-symbolic level and physical disability is the norm, the holistic approach provides the opportunity to bring together the many levels and forms of interaction. This approach also lends itself to an examination of more ecological forms of intervention.

Because of the emphasis placed on the experiential approach within humanistic psychology sensory awareness became one of its central themes.

Chapter 9

Humanistic Psychology and Sensory Stimulation

The knowledge gained from the involvement of humanistic psychology in sensory stimulation has been influential. But there remain strong links between the natural sciences and those (such as the humanistic psychologists) who favour a more functional approach. The very complexity of the needs of those with profound and complex disabilities has made it necessary to harness information and approaches from a wide range of sources. This is particularly the case when the use of technology is considered.

Sensory awareness techniques used within humanistic psychology utilized a range of different approaches designed to sensitize the individual to visual and auditory stimuli. In pursuit of a raised level of awareness altered states of consciousness (ASCs) were induced by changes brought about by increased sensory awareness. Sensory deprivation and flooding were used to evoke ASCs. Sensory flooding was a method developed by Masters and Houston. It involved the use of combinations of dissolving slides of coloured patterns and tapes of music. (Stevens, 1990). Participants were 'flooded' with high levels of sensory and auditory stimulation. Sensory deprivation (on the other hand)

involved the removal of as much extraneous stimulation as possible (Lilly, 1977). This approach was designed to focus awareness upon the internal resources of the individual. To facilitate sensory stimulation a range of mood or `state' enhancers were used such as alcohol or `mind-changing' drugs.

Multisensory environments are to a large extent products of their time. From the experiences of the 1960s has come awareness that environments can be engineered to facilitate certain effects on those using them. Unlike the original seekers of enlightenment those individuals with profound and complex needs have little control over what happens to them. Drug therapy is more often used to control epilepsy and other associated symptoms of brain damage than to enhance mood (although mood may well be affected). With the benefit of greater understanding of brain function and the role of the senses, it is now possible to provide more targeted input. This reduces the inadvertent use of the 'flooding' effect, which can easily overwhelm learners with a fragile medical status and impaired cognition.

A failure or impairment in processing sensory information (often combined with difficulty integrating sensory input) remains one of the major characteristics of learners with profound and complex needs. Much emphasis has therefore been placed on the use of technology in relation to the needs of this population. The rationale for this lies in two main areas and links closely with visual cognition, development and assessment. The first of these is concerned with the development of latent visual potential and derives from developmental roots.

Fielder (1991) gives an explanation from a physiological perspective:

Uniquely, during this period, also known as the sensitive period, the nervous system has the capacity to recover (partially) from some forms of arrested development or damage. Stimulation, it is postulated, results in functional improvement by inducing structural/neurochemical changes within the nervous system. However, after about 6-7 years the nervous system is no longer sensitive to deprivation and, critically important, it is no longer amenable to the effects of visual stimulation for the purpose of structural/neurochemical change. (pp.1306 –1309)

The remaining area of use is more concerned with the development of latent abilities in order to *achieve* specific outcomes. This may be the use of environmental adaptations and technology such as the use of specific lighting effects to promote visual tracking, interest and awareness. Or, more especially in multisensory environments by combining auditory and visual stimulation in order to increase visual fixation or auditory discrimination. Sensory stimulation may also be used to encourage overall development by providing visual enhancement to increase levels of general body and environmental

awareness. Other senses are targeted either in isolation or in combination but the two main approaches to sensory stimulation have been summarized by Goldstein (1999) as:

- The behavioural approach – Linking stimulation and perception
- The physiological approach – Linking stimulation and neural firing

However, visual cognition remains one of the most fundamental aspects to be addressed. If the focus of stimulation is to increase the awareness of those with profound and complex needs and thus interaction with a world outside their own bodies, visual cognition must be better understood. Like many of the things we take for granted, being able to *see,* is the tip of an epistemological iceberg. Dretske (1990) gives the example of truth and knowledge. We know that something exists outside our own bodies because we can see, touch and perhaps taste its existence but underpinning that sensory experience is perception. Memory is fundamental to the retention of acquired knowledge. Sensory stimulation has thus the double task of awakening interest and the process of recall. Dretske goes further in his exploration of the complexities involved:

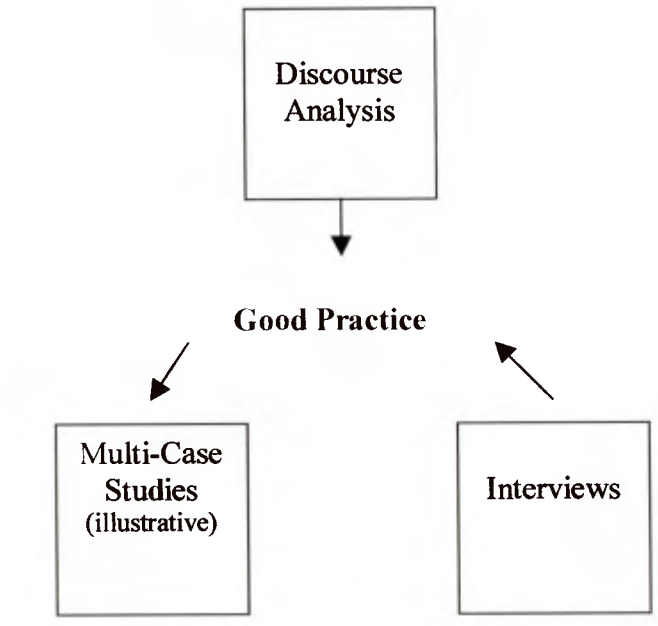
There has been a dramatic increase in our scientific understanding of how we know some of the things we know. Nevertheless, despite this progress, certain philosophical problems, problems concerning the nature, scope, and limits of visual cognition remain unanswered – or, better remain without answers that command widespread assent... (p.88)

Chapter 10

The Research: Methodology

Like much research in what are considered low prevalence areas of special educational need, this project has little foundation research from the social sciences on which to build. It is therefore exploratory, rather than theory constructing. Although considerable work has been carried out by researchers from a more positivist tradition such as natural science and then applied to education, the dominant model remains one of empiricism (Cohen and Manion, 1994). This is exemplified by the work of Powell (1996) on neural-based visual stimulation with infants with cortical visual impairment or Jaworski (1992) who examines the use of preferential looking in relation to measures of visual acuity. In recognition of the exploratory nature of the research, the use of case study inquiry has been chosen as the main methodological tool. Two main aspects of data collection underpin this approach and one primary method of analysis. The first of these is the use of interviews; the second is the use of observation. Interview material comes from both focus group and from staff in the schools selected as case studies. The method chosen for data analysis is derived from discourse analysis. The interaction between the outcomes of the different aspects of the methodology allows for methodological triangulation.

Figure 1: Approaches used in the collection and analysis of data.



Case Studies

Rationale for the choice of methodology

Case studies may serve to illustrate both direct (where we are able to inspect the objects that appear) or representative realism (where our access to objects is indirect and

mediated by inner sensory experiences). As Scott (1995, p.29) identifies they may be chosen *for their typicality or for explanatory power. They are either representative of a wider whole or they illuminate theories which concern the wider setting.* Unlike more quantitative approaches there is no attempt to standardize the outcomes from this process. Indeed it is the very specificity of case studies, which is important.

There is much discussion centered on definitions or descriptors of case-study research. For instance, commentators such as Hammersley and Gomm (2000) focus on the dimensions which potentially mark the boundaries of the case study. Specifically they note:

The term 'case study' is employed to identify a specific form of enquiry; notably, one which contrasts with two other influential kinds of social research: the experiment and the social survey. (p.2)

Cohen and Manion (1994) also pursue a similar use of contrast but go further:

Unlike the experimenter who manipulates variables to determine their causal significance or the surveyor who asks standardized questions of large, representative samples of individuals, the case study researcher typically observes the characteristics of an individual unit – a child, a clique, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensely, the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalizations about the wider population to which that unit belongs. (pp.106-107).

Critics of the use of case studies point to the difficulty of establishing generalisation from

what is perceived as the particular. This opens up a deeper philosophical debate concerning the nature and relationship between concepts of knowledge and truth. Writers such as Strake (2000) identify an important distinction between what is described as a naturalistic generalisation and the concept of generalisation from a positivist perspective. Strake points to a difference of particular importance to this research:

The legitimate aim of many scholarly studies is to discover or validate laws. But the aim of the practical arts is to get things done. The better generalizations are often those more parochial, those more personal. In fields such as education and social work, where few laws have been validated and where inquiry can be directed towards gathering information that has use other than for the cultivation of laws, a persistent attention to laws is pedantic. (p.23)

Alongside these current perspectives, it is valuable to reflect on the insights offered by an educational theorist whose views remain relevant twenty years on. Stenhouse (1980) emphasises:

Sometimes, particularly in evaluation research, which is commissioned to evaluate a specific case, the case itself is regarded of sufficient interest to merit investigation. However, case study does not preclude an interest in generalisation, and many researchers seek theories that will penetrate the varying conditions of action, or applications founded on the comparison of case with case. Generalisation and application are matters of judgement rather than calculation, and the task of the case study is to produce ordered reports of experience which invite judgment and offer evidence to which judgement can appeal. (p. 49)

Stenhouse goes on to identify what he describes as three broad styles of case study inquiry, which he categorizes:

In evaluative case studies a single case or collection of cases is studied in depth with the purpose of providing educational actors or decision-makers (administrators, teachers, parents, pupils, etc.) with information that will help them to judge the merit and worth of policies, programmes and institutions.

An educational case study [is where] many researchers using case study methods are concerned neither with social theory nor the evaluative judgement, but rather the understanding of educational action...
They are concerned to enrich the thinking and discourse of educators either by the development of educational theory or by the refinement of prudence through systematic and reflective documentation of evidence.

Case study in action research is concerned with contributing to the development of case or cases under study by feedback of information which can guide revision and refinement of action.
(p.50)

This research can therefore be seen to locate within the second of Stenhouse's broad styles of case study research that of the 'educational case study'. However, because of the dynamic quality of case studies there are also important commonalties between the aims

of the research and those of the 'evaluative case study' in its attempt to relate policy and practice.

Thus, the use of case study inquiry gives the opportunity in this research for:

- An examination of a low incidence population within a defined context.
- Exemplification of a specific phenomenon within differing environments.
- The application of a framework for evaluation.
- The development of guidance materials for further dissemination.

Interviews

The use of interviews is an integral element in this research of the development of case study material.

As Cohen and Manion (1994, p.273) note there are four kinds of interview that are used as research tools:

- The structured interview
- The unstructured interview
- The non-directive interview
- The focused interview

This research utilizes a combination of a form of semi-structured and focused interviews. In this way it combines the opportunity to interview the individual concerned in some depth, with the more complex dynamics of the focus group. This does not mean that interviews with teaching staff were scripted, rather questions were arranged along themes identified by the focus group. Therefore, before conducting the research, potential key areas for questioning had been identified. This formed the basis of situational analysis described by Robson (p. 241, 1993) as:

- *The important aspects of the situation to those involved*
- *The meaning these aspects have for those involved*
- *The effects they have on those involved*

Without some consistency of themes it would have been difficult, if not impossible, to ensure that interview material provided contextual information germane to the observations. Conversely, without flexibility teachers would have been constrained in their observations about the outcomes of teaching sessions. Unlike the focus group, which relies heavily on group dynamics, the individual interview is dependent on a one to one situation. It was important to be aware in the case of individual teachers of the need to develop a relationship based on trust. Since they were being videoed as they responded participants were likely to be particularly self-conscious. The following strategies were introduced to reduce self-consciousness on the part of the interviewee:

- One to one interviews were filmed at the end of teaching sessions. This meant that the subject had already spent some time with the researcher in a variety of contexts.

- Before the interviews subjects were shown the results of the filmed lesson observations. This had the twofold effect of refreshing their memory and engaging them in the process of reflection.
- Interviews were filmed in locations chosen by the interviewee.

Focus Groups

A definition of focus groups provided by Millward (1995) explains that the focus group is a discussion-based interview, which involves the simultaneous use of multiple respondents to generate data. The group is 'focused' by the use of an external stimulus and is organized through the medium of a 'moderator'. This approach is well known in certain forms of market research (particularly in relation to the social effects of mass communication). Although primarily developed as a sociological tool, the use of focus groups has gained prominence within psychology. Millward points to an underlying assumption behind the use of focus groups:

The assumption of focus groups is that people will become more aware of their own perspective when confronted by active disagreement and be prompted to analyze their views more intensely than during the individual interview. (p.277)

Other commentators would seek to link the outcome of the focus group more closely with discourse analysis. Sherrard (1997) defines discourse analysis as '*focusing on how people deploy language and other forms of communication over the course of real social interactions.*' . This view is supported by Beck, Trombetta and Share (1986) who describe focus groups as '*an informal discussion among selected individuals about*

specific topics relevant to the topic in hand.'(p.73) Vaughn, Schumm and Sinagub (1996) note that:

- *Focus groups can be used alone or with other methods (qualitative or quantitative) for a wide range of purposes.*
- *Focus groups can yield a great deal of specific information on a selected topic in a relatively short period of time.* (p.13)

As Millward (1995) indicates, focus groups are not geared to the formal testing of hypotheses in the hypothetico-deductive sense *...the aim of focus groups is to get closer to participants' understanding of certain issues* (p.276). In this particular research the aim in establishing a focus group was:

- to provide overview information on the use of multisensory environments and interactive technology, which could then be used to identify features of good practice. These features were then to be exemplified within multiple-case studies.

The focus group provided significant advantages over other methods:

- It is well suited to gathering information from a wide range of views.
- It is cost effective in reaching participants from a wide geographical spread.
- It enables the researcher to test hypotheses quickly

Observations

As Yin (1994) outlines:

By making a field visit to the case study "site" you are creating the opportunity for direct observation. (p.86).

And of particular relevance to this research Yin adds:

Observational evidence is often useful in providing additional information about a topic being studied. If a case study is about, for instance, a new technology, observations of the technology at work are invaluable aids to any further understanding of the limits or problems with the technology. (p.87)

Lesson observations were used for the dual purpose of focusing the interviews and also providing the researcher with potential evidence, which could be examined at a later stage. Because they were filmed they also offered the possibility of comparison between approaches and interactions. This was important for several reasons:

- They could be used as another source of evidence as a form of theoretical replication.
- They could act as a resource for the development of illustrative material for further dissemination.
- They could be used as a prompt for the interviewee.
- They could encourage ownership of the research by those taking part in the study.

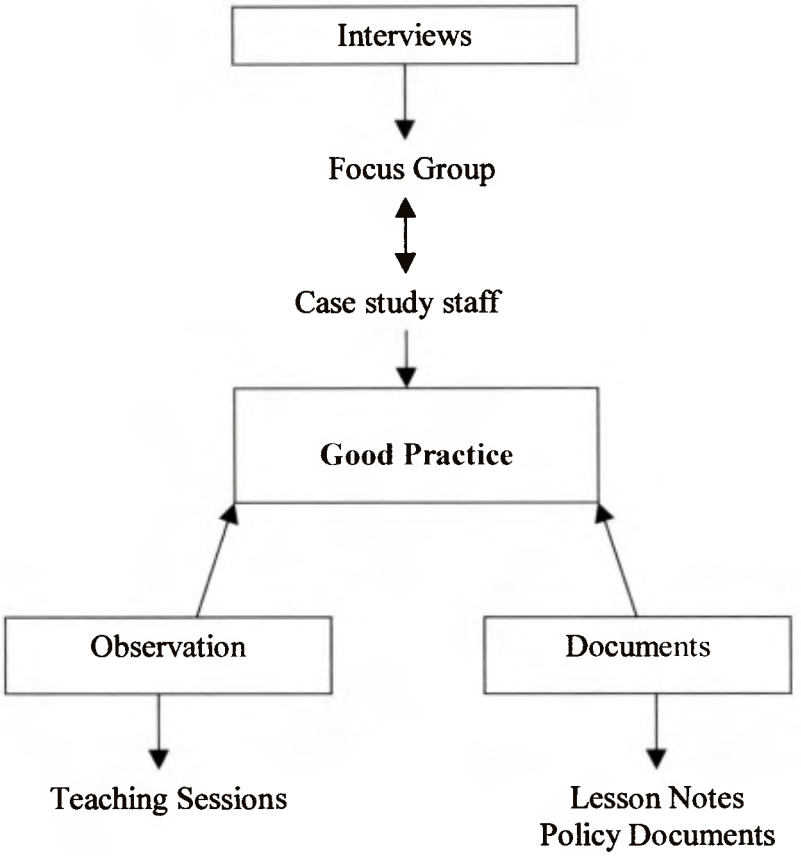
Triangulation

The use of case studies offers the possibility of collecting evidence from a number of sources. Yin notes:

The use of multiple sources of evidence in case studies allows an investigator to address a broader range of historical, attitudinal and behavioral sources of evidence...(p.92)

There are obviously particular difficulties in some elements of triangulation when a lone researcher is involved. For instance, analysis and coding of interview material cannot be scrutinized within the context of inter-coder reliability. This makes it all the more important to harness additional approaches to the collection of evidence. The strategy adopted in this research allows for the same phenomena to be examined from a variety of different perspectives. This is achieved by the development and application of a framework of effectiveness. This ensures an iterative review of themes. Lesson observations are combined with interview material in order to consolidate the judgements made by the researcher. Finally, the production of guidance material gives the additional opportunity of bringing the components of case study evidence together. This is with the intention to communicate the outcomes of the research to an extended audience of professionals and interested others. Below is a diagram, which highlights multiple facets of the evidence base.

Figure 2: Sources of Evidence



Chapter 11

Ethical Issues

Robson (1993) highlights the fact that there are particular issues around research associated with particular populations. Much of the research conducted in the low prevalence but high areas of need usually associated with the use of multisensory environments concentrates on populations with limited communication and understanding. As individuals they are often highly dependent and have little autonomy any power relationship is inevitably one-sided. Cohen and Manion (1994) stress:

The principle of informed consent arises from the subjects' right to freedom and self-determination. Being free is a condition of living in a democracy...Consent thus protects and respects the right of self-determination. (pp.350-352).

A dilemma emerges, that on the one hand;

Being ethical limits the choices we can make in pursuit of truth. Ethics say that while truth is good, respect for human dignity is better, even if, in the extreme case, the respect of human nature leaves one ignorant of human nature. (Cavan, 1977,p.810)

On the other hand:

Both sides have a weakness. If, for instance, as the absolutists usually insist, there should be informed consent, it may leave relatively privileged groups under-researched (since they will say no) and underprivileged groups over-researched).

(Plummer, 1983 in Cohen and Manion p.362)

There are no easy answers. More emphasis of the rights of those who are disabled makes this issue particularly sensitive. The compromise reached in this research was to seek the consent of significant others. Teachers and parents were therefore approached and gave consent based on their knowledge and concern for the young people involved.

The names of pupils have been changed but out of consideration to the individuals concerned a match has been found for names which reflect particular ethnicity.

Chapter 12

Conduct of the study

Description of participants and group

Fifteen professionals all currently involved in the use of multisensory environments within education were invited to become members of the focus group. All those contacted agree to take part. This pan-disability group straddled a wide range of pupil need and staff function. Some professionals worked as class based teachers whilst others operated in a more advisory role. Prior to the actual meeting the group of participants was sent a list of descriptors of the use of focus groups based on the study by Byers (1998). On the day of the meeting following an introductory presentation, this larger group was divided into three smaller discussion groups, in order to address the theme of good practice. Three moderators were involved in group facilitation and made notes during the discussions. The outcomes of discussion were then collated, typed and subsequently sent to members of the focus group for any additional comment and verification. The moderators involved were all very familiar with the aims of the research and the use of focus groups.

Procedure for Data Transcription

Key ideas were summarized following collation and then grouped as themes. The procedure adopted followed the analytic approach identified by Lederman (1990); that of the development of categories based on the data. The following categories/themes were identified:

- illustration of the physical environment
- illustrations of policy and planning
- clarity of purpose
- match to pupil need
- staff deployment and development
- timetabling

Selection of case study material

Focus group members were asked (in the light of the outcomes of the day) to suggest possible case study schools. Five case studies were then chosen to exemplify the range of features identified by the group. These case study schools represented:

- mainstream primary phase provision
- specialist provision for visual impairment
- specialist provision for deafblindness
- provision for severe learning disabilities
- specialist provision for sensory impairments and learning disabilities

Case study schools were contacted and site visits arranged. The main method used to collect case study material was through the use of digital video recording. Structured interviews were conducted with key members of staff in each of the case study schools. Sessions involving the use of multisensory environments and interactive technology were also videoed. In total ten members of staff from case study schools were interviewed..

Other material collected included:

- Curriculum materials
- Recording and assessment material
- Planning documentation

Interviews were fully transcribed. Verbatim scripts were then produced. The process of analysis was derived from a number of sources (Willott and Griffin, 1997; Bozic, 1997; Potter and Wetherall, 1987,1992) and took the following form:

- Grouping of responses in relation to 'given' themes (themes derived from focus group material).
- Coding of in-vivo 'themes' (Bozic, 1997) directly from transcript material. Pattern codes were then developed which linked theme and response.

Coding was carried out manually and used the technique highlighted by Miles and Huberman (1994). This inductive coding technique allows for data to be analyzed line by line within a paragraph. Beside the paragraph a list of labels was generated and then reviewed. Theme and response were then graduated from micro to macro levels. In many respects this approach followed Bogdan and Biklen (1992, p.61) who divide codes into ten elements, eight of which are relevant to this particular study:

1. *Setting/Context:* general information on surroundings that allows you to put the study in a larger context
2. *Definition of the situation:* how people understand, define, or perceive the setting or topics on which the study bears
3. *Perspectives:* ways of thinking about their setting shared by informants
4. *Ways of thinking about people and objects:* understandings of each other, of outsiders, of objects in their world
5. *Process:* sequences of events, flow, transitions, and turning points, changes over time
6. *Activities:* regularly occurring kinds of behaviour
7. *Events:* specific activities, especially ones occurring infrequently
8. *Strategies:* ways of accomplishing things; people's tactics, methods, techniques for meeting their needs

To allow for further analysis, interviewee responses were then grouped under each code. The detail of each theme emerged with greater clarity from this. Had this been a larger study with more emphasis on triangulation through more quantitative means then a system of scoring could have been adopted. With such a relatively small sample this was not necessary and would not have yielded sufficiently robust statistical data. Ideally, on a larger study I would have been able to use a number of additional personnel and establish inter-coder reliability and thus investigator triangulation but given the parameters of this study and the limited resources available this was not possible.

Figure 3: List of Codes

Based on collation of focus group indicators of good practice.

Physical Environment	**PE**	**1.1**
PE: Organisation	PE-Org	1.2
PE: Flexibility	PE-Flex	1.3
PE: Materials/Equipment	PE-Mat	1.4
PE: Use	PE-U	1.5
PE: Health and Safety	PE-HS	1.6
Policy and Planning	**PP**	**2.1**
PP: School level	PP-SL	2.2
PP: Individual Focus	PP-IF	2.3
PP: Group	PP-G	2.4
PP: Evaluation	PP-E	2.5
PP: Assessment	PP-A	2.6
Clarity of Purpose	**CP**	**3.1**
CP: Choicemaking	CP-CM	3.2
CP: Therapeutic	CP-T	3.3
CP: Continuity	CP-C	3.4
CP: Links	CP-L	3.5
CP: Curriculum	CP-CC	3.6
CP: Evaluation	CP-EV	3.7
Timetable	**T**	**4.1**
T: Preparation	T-P	4.2
T: Information Sharing	T-IS	4.3
T: Adaptation	T-A	4.4
T: Response	T-R	4.5
Meeting Need	**CD**	**5.1**
CD: Inclusion	CD-IC	5.2
CD: Status	CD-ST	5.3
CD:Need	CD-N	5.4
CD: Routine	CD-R	5.5
CD: Interaction	CD-I	5.6
CD: Outcome	CD-O	5.7
Staff deployment and development	**ST**	**6.2**
ST:Levels	ST-L	6.3
ST:Attitudes	ST-A	6.4
ST: Roles	ST-R	6.5
ST: Decisionmaking	ST-D	6.6
ST: Collaboration	ST-C	6.7

Once interview data had been coded and examined it was then necessary to go through a further set of operations. These have been described by Lincoln and Guba (1985, p.62) as follows:

1. "filling in": adding new codes, reconstructing a coherent scheme as new insights emerge and new ways of looking at the data set emerge
2. "extension": returning to materials coded earlier and interrogating them in a new way, with a new theme, construct, or relationship
3. "bridging": seeing new or previously not understood relationships within units of a given category
4. "surfacing": identifying new categories

Of particular importance in bringing together the perceptions of the focus group, case study material and the outcome of discourse analysis was the establishment of a framework of effectiveness. This framework derives from a coalescence between the indicators of effective pedagogy outlined by the TTA study and those provided by the focus group and used to code interview material. The rationale for this approach is to set concepts of effective pedagogy within a more inclusive dimension but at the same time giving due recognition to the specific knowledge and expertise of those involved in both case study schools and focus group responses.

Figure 4: Framework of Effectiveness

Outcomes of focus group	Descriptors from TTA Research
The physical environment	• effective technical back-up and support to overcome any difficulties encountered and the provision of adequate resources.
Illustrations of policy and planning	• a planned match of pedagogy with the identified purpose of ICT activities and learning outcomes.
Clarity of purpose	• clear identification of how ICT will be used to meet specific objectives within subjects of the curriculum to improve pupils' attainment.
Match to need	• Ensuring that pupils have adequate ICT skills to achieve subject specific objectives.
Staff development and deployment	• Matching starting points for development for particular teachers in accordance with their preferred teaching styles and approaches.
Timetabling	• Adequate access to and intensity of use of the necessary equipment by pupils and teachers.

Chapter 13

Research Findings

The Case study Schools

The five schools chosen as case studies are geographically widely spread and distinct in the emphasis they placed on the use of technology within a multisensory environment. An average of four hours was spent in each school and site visits combined observations of pupils and teachers with interviews with key members of staff as well as the collection of supporting materials. In the majority of cases key members of staff in relation to the use of multisensory environments held positions of management within the schools. In all but one case teachers had overall management responsibility for at least one aspect of the school. Two headteachers, two deputy heads and one teacher-in-charge were amongst those involved in interviews. Other staff included a specialist in visual impairment, advisory teacher and a learning support assistant. It could be hypothesized that the high level of interest shown by senior managers in the case study schools may go some way to explain the well-developed practice observed in the multisensory environment sites visited.

The case studies are presented as illustrations of the outcome of the focus group responses and therefore organized under the following headings:

- illustration of the physical environment
- illustrations of policy and planning
- clarity of purpose
- match to pupil need
- staff deployment and development
- timetabling

Case 1

Case 1 is a mainstream primary school run by a Local Education Authority in a rural and remote area of the UK. The school has a wide catchment area and a significant number of pupils are described as having special needs. The school houses a large and well-appointed multisensory environment. Inclusion is the norm for those pupils with moderate learning difficulties but not for those with more severe forms of special need. Unlike the other case study schools there are no children with profound and complex needs attending the school but there are strong links with other forms of provision and with community groups. The 'Studio' as the multisensory environment is called therefore provides a resource for both school and community.

Illustration of the Physical Environment

The 'Studio' is an integral part of a large primary school. It is a newly created facility within an existing open space about the size of a small hall. To allow for flexible use the environment can be partitioned off to provide access to the following technology:

- darkroom with ultraviolet lighting
- white room with soft play area and infinity hut
- sound/light wall and floor

One interviewee describes how this mainstream primary school came to be chosen to house a multisensory environment.

After full discussions with peripatetic and support services it was decided that we should establish the Studio in our school. It was established in our school because we have one of the largest support for learning bases in the area.

It was important to the staff that the multisensory environment resource had an appropriately mainstream name:

We went through several names like multisensory room. The main thing is that it is a flexible resource. It is there to meet need in terms of special need but it can be used as a drama studio, a music studio, it's there for all the community to use. So "Studio", as well as being a more attractive name also reflects the more multi-purpose outcomes the school gets from it.

The Studio is managed by a teacher who is the Sensory Co-ordinator. Senior managers (which includes the SENCO) have thought carefully about use of the facility and certain ground rules apply:

So it's used by all these external groups. They contact me and I deal with the bookings. I've got a timetable and when they come here they log in. We can tell who has been here and for how long.

I think the whole of the community now knows it is here. Some (know what a multisensory environment is) and some don't. That can still be a problem because those that think they know what it is want to come because they think of it as an exciting place to be but they perceive of it as a social exercise and we are committed to the studio being used to enhance teaching and learning

Funding for the "Studio" came from Central Government and followed the creation of small unitary authorities within the area:

We all had new directors of education. If a parent said I want this or that for their child we wanted to be able to say OK you don't have to go (out of the Authority) to get it....

Central Government came up with a bundle of money and instead of a little thing we could make use of the (larger) room.

Illustrations of policy and planning

One interviewee described the overarching approach to the development of policies:

The way the school runs indeed is not top down. We have a structure in the school in which we co-operate to develop all policies.

Because the school is hoping to extend the use of the Studio their policy in relation to external groups is quite specific:

All persons are included, all we ask is they have a very clear idea of the purpose they want to use it for. There is a form to complete and they indicate which equipment they want to use and what they want to do. Because again it is important that the equipment in the Studio is used for specific purposes.

The role of technology is considered in relation to future policy and planning:

We need to innovate and will continue to look at different ways of meeting youngsters' needs. I have no way of knowing where technology is going to be in ten years time. If we continue as we have started, that is to say that we establish a Studio and facilities to meet need, we will keep pace with technological developments.

It just takes time to change your way of thinking and develop what you are going to offer.

Clarity of Purpose

The school organizes the delivery of the curriculum through a number of cross-subject topics. This approach means that whole year groups have been able to use the Studio facility on a fully inclusive basis to provide dramatic reconstructions of events. Two of these (which the staff considers the most successful) were aimed at bringing historical themes to life:

So we were looking at early experience of cave people. It was hugely successful in the Studio, the darkroom was set up with sticks for the fire – we rubbed the florescent sticks together really hard. Someone – a member of staff, just flicked on and off (the ultraviolet light) so it just sparked. Then once they got going and the fire was on all the time, we told stories about those days, what animals did you meet.

The most spectacular one was YR. 7 last autumn. They always do a topic on the war. At the end of the topic when they have explored what it was like to be an evacuee they had to imagine that (the Studio) was an air raid shelter and they had all the lighting just right and I'd been producing a play that was set in the second world war so we had a tape that we'd mixed with all the sounds such as the bombers coming in and then we flashed the lights to make it look like a searchlight and then the bombs falling. The sound of the bombers disappearing and the crackle of fire and the mood was fantastic..chilly.

For those pupils with learning difficulties early uses of the Studio have focused around learning reinforcement in subjects such as Maths:

We've got the different shapes (under the UVA) to reinforce what we are doing here (in the classroom) with some of the younger kids.

Match to Need

Interviewees felt the school is still at an early stage in making sure that the Studio is used by those who would benefit most. They are therefore reviewing current pupil needs and seeking to identify future issues:

There are six children coming from the nursery and they have quite diverse needs.

One of the main strategies already identified is the use of the Studio to increase motivation and attention span:

We had a fairground (created in the Studio) with a fortuneteller with a wheel with the signs of the zodiac (made by the art teacher). The infinity hut was used for telling stories. We have one boy...his attention was all over the place. He couldn't hone in on a story. He went into there (the infinity hut) with two other children and he concentrated on answering questions and now his attention is much better. It was a bit of a breakthrough...

Mick (has) cerebral palsy..He was absolutely cheesed off with doing physio. (He was) very vocal about not wanting to go to physio and the physiotherapist had to cajole him to

do his exercises but when he went in there (the Studio) he apparently did press-ups which no-one had ever seen him do before...

Staff deployment and development

The attitude of the staff is considered to be of key importance:

I believe our staff are well motivated, innovative and are prepared to pick up new ideas and run with them and meet challenges if they think they are helpful to the children in the school.

In addition to staff development within the school, there is also recognition that it is important to include a wide range of stakeholders in development activities:

when we established the studio we had inductions for all members of staff to familiarize themselves with the equipment that was down there and to have some degree of training on its usage. On inservice days we've had a rolling programme and staff can come and have a look see. On another day we will be available for staff to come in and use the stuff.

Anyone involved in support for learning could come along (to training sessions). We have had about forty-five people from all over. We had some nursery people and some primary school people, family, child centre and social work...I've suggested to the Assistant Director and our support for learning that we ought to set up three days over the next session..

...we had one day where there were representatives from different services like the hearing and visually impaired.

Timetabling

There are clearly significant issues within a mainstream context when organizing access to the facilities of a multisensory environment. The school has tackled this in two ways. One aspect of timetabling is concerned with providing inclusive opportunities for whole year groups to come together (as illustrated by the dramatic reconstructions) The other aspect concerns the timetabling demands of the learning support base within the school:

We have a Thursday activity group when we split up into four groups and one member of staff has responsibility for a group of children. That group of children rotate and will have one member of staff one week when they will do cooking or baking, then sewing and then we go out and about, we call it 'social', we go to a café. Next year we are going to plan five groups and one of those groups will have an afternoon in the Studio, which'll be planned for that group of four children.

It (the studio) is often used as an experience in itself. It tends to happen more in a casual way (staff ask) "Oh could we have the studio this afternoon" and it's done as a sort of reward/respite and it's enjoyed for itself, the way that Christopher's enjoying the sand just now.

Case 2

Case 2 is specialist non-maintained residential provision for pupils with visual and multiple disabilities. It is set in a rural area of the Midlands. The school has devoted a large amount of space to a series of rooms each with a slightly different emphasis in terms of sensory stimulation. Over a long period of time the use of these rooms has gone through various stages of use and development:

We had the first part about ten years ago. Yes, it was used, but after the novelty wore off I saw that certain children benefited more, so not everyone went in there. There was (subsequently) a little more thought about which children went in to it...Then we had the dark room with the ultraviolet light

Illustration of the physical environment

The series of rooms, which comprise the multisensory environment, include an assessment facility, which can be used to assess the functional vision of pupils as well as a range of technology:

- a white room with vibrating soft area and bubble tubes surrounded by mirrors
- a white room with solar projection facilities, a range of fibre optic and sound/music making facilities
- Dark room with ultra violet light

The use of the multisensory environment varies across the different groups within the school:

I put round a little checklist to see who used it and how. One of the groups had used it for drama. You can get more children in (without the dividing curtain) and you can get effects like thunder and lightning.

Illustrations of Policy and Planning

The policy and planning behind the use of the multisensory environment is very much geared towards its use as a functional assessment facility. The role of technology is also largely seen within this context. There is particular emphasis on health and safety issues that relate to specific forms of technology such as ultraviolet light. At the same time there is recognition of the possible functional benefits of specific environmental adaptations:

We have had several children over the years who have come in (to school) and no-one knows whether they have any sight at all but then you may notice some response to light, then under ultraviolet light you will find a (more significant) response...Sometimes children will begin to develop visual skills, which they haven't before because they haven't had that amount of contrast before. We are quite careful about the use of ultraviolet light. We have a timer (which operates) about every fifteen minutes.

Clarity of purpose

Staff members are clear that assessment is the main use of the multisensory environment. Assessments are considered to be clearly linked to achieving progress in pupil development including (where possible) levels of visual functioning. The purpose of such assessments is therefore to establish a suitable visual training programme and to identify strategies for increasing motivation:

His whole development has been aided by him learning to use his vision...He will reach to pick up his drink from the table. He still needs very high contrast but (in the past) he didn't use his sight to the capacity he does now. This would be part of his visual training programme.

A couple of children have made enough progress so that no one would be in any doubt that they had some sight, even though notes say they are blind...one child was in a wheel chair. He kept his hands under his tray and didn't want to interact. It was quite difficult. He did begin to be interested in things under the ultraviolet light and did begin to reach and did begin to reach out to bright things in the normal environment. At the same time he was beginning to walk and use a rolator.

A child who wasn't verbal or interested in many things – we actually built up (by using multisensory technology) quite a picture of what he was capable of doing. He had quite a high level of visual skills; it was just that (previously) he wasn't interested in anything.

Match to Need

The school uses its multisensory environment to meet a variety of needs. All pupils are visually impaired but have a wide range of additional and multiple disabilities. The majority has ocular conditions although some have both ocular and cortical (processing) difficulties. All pupils have some form of communication difficulty and an increasing number exhibit challenging behaviours.

Pratima has not got a great deal of patience and she can be quite destructive with equipment. She will move quickly to grab and destroy equipment. Even the activities she enjoys, she will usually only tolerate for a couple of minutes. She likes using the touch screen on the computer and will be highly delighted for two to three minutes and then try to throw it on the floor...It was interesting to see how she was with the fibre optics – she was so gentle and explored them – even looking down the end...The benefit for Pratima of going in there (the multisensory environment) is spending so long on one activity which I have never seen her do in any other situation. To move on to handling other equipment with such care would be very useful.

This interviewee highlighted some of the positive effects of technology for socialization:

She is quite fascinated to see the projection of colour going across her hands. The first time she went in there (the multisensory environment) she was trying to wipe, lick it off. It was like paint, she was trying to wipe it off and put it on the other parts of her body and tee shirt. She likes the computer, she will climb onto the table and lie close to it – she

likes to have things very close up. She is not a child who socializes – she likes to be on her own most of the time. I think a few of the children have shown a bit more social interaction in the multisensory environment. She started (to show interest) by seeing the projected image on Matthew and became interested in him because of that

Staff deployment and development

Because of the very complex needs of the pupils a wide range of professional and support staff are involved:

I like to have someone with me who knows the child quite well, such as classroom assistants.

We have a speech therapist who is also feeding co-ordinator and communication specialist and she uses the information (from the multisensory environment) quite a lot in deciding what kind of communication aid should be used.

Timetabling

The whole school uses the multisensory environment as a resource. There is a balance to be struck about regularity versus intensity of use. Some pupils were seen as benefiting from prolonged sessions:

The benefit for P of going in there was spending so long on one activity which I have never seen her do in any other situation..

Other pupils were seen as needing access for relatively short periods of time on a very regular basis.

Case 3

Case 3 is a non-maintained school for pupils who are deaf. It is situated on the outskirts of a large industrial city in the north of England. Although it was established as specialist provision in relation to deafness and hearing impairment, it now houses a thriving Unit for pupils who can be described as multisensorily impaired (MSI). With its long history and experience in the area of communication needs, the school has sought to develop this expertise to meet the needs of the growing number of its pupils who are deaf with additional forms of disability. The MSI Unit is well resourced and staff very consciously seeks to promote active exploration of their environment by pupils. Amongst other initiatives staff have developed an interactive corridor to encourage tactile exploration. There is also a significant awareness by staff of the merits and demerits of different forms of technology with their pupil population. Members of staff are therefore particularly keen to emphasize the importance of seeing the whole environment as a multisensory experience and the multisensory environment as one small element of this.

Illustration of the physical environment

The Unit contains one medium sized white room with an interactive bubble tube and a range of multisensory environment equipment. The multisensory environment opens directly onto a larger hall space, which is used for individual and group work. Because of

its location within the Unit it is possible for group work to be carried out in the hall space and individual work to be undertaken within the multisensory environment. This limits any potential isolation of facilities and reduces staffing problems. In addition to the multisensory room the Unit has a classroom devoted to housing a collection of technology and the necessary equipment for the maintenance and development of switches. The multisensory environment is very much seen as an extension of a classroom environment.

Policy and Planning

Policy and planning link very closely with the Unit's emphasis on communication and the importance of the pupil having control. Staff are clear that the multisensory environment may not always be the best option:

Certainly with my group it doesn't give any opportunities for mobility, the children can't move easily in there in order to access something and an awful lot of my work is involved in motivating children to move and access the environment. I find them very restrictive places, plus it only (the multisensory environment) really gives visual rewards, which is fine if that's what motivates. But it doesn't always motivate (there is) too much too look at and it bombards them. I think it has a good place in getting children looking, but once they're at that stage there's a whole world out there that can give them many more motivating things, I think personally.

However, the use of interactive technology is seen as fundamentally important and the use of the multisensory environment is built into the communication programme.

Before a child goes to any activity (such as an activity in the multisensory environment) we use objects of reference (OR) to introduce the activities of the day. The children come and collect the OR and take them to the activity, so hopefully they'll build up that understanding. Most of the children with one exception have that understanding. They understand that the OR or the symbol or photograph represent that activity and they'll reject it if it's something they don't want to do.

Clarity of Purpose

Interactive forms of technology are used both in and out of the multisensory environment. Within the multisensory environment the interactive bubble tube is used as part of a numeracy programme as an introduction to the language of measurement, shape and colour. There is also the more global use of interactive technology in order to offer gradually more challenging tasks:

All our children in the Unit are heavily into understanding cause and efffect...and then there are several directions we go after that. We move the switch further away which is a fairly obvious one, or we give them the choice of two switches, one of which is wired up and the other one which isn't. They've got to choose the right switch (to make things work). And then you can make it more challenging by making them reach across midline for the right switch. And then you can get two identical switches and one has a little cross on and they've got to choose the one with the cross. Then you can reduce the size of the cross.

There is also recognition that pupils must be helped to have ongoing control of their environment and that technology is part of everyday life. The reliability of response from technology is sometimes not as predictable as it should be. Pupils can find their own solutions. For instance, one pupil prefers the airflow from a hand dryer:

Eric actually has a session sitting at the hand dryer putting his hand up to where he is actually breaking the beam. Everytime he puts up his hand, he gets this lovely warm air and it's consistent.

Staff reflect on future issues:

I used to say we have to move the child away from switches eventually because the world isn't made for switches, but in fact the world is becoming made of switches. Light switches here that they have a lot of fun with (points to switches), there are other switches for computer inputs and outputs which at some point in the future they'll be dealing with. It is quite possible that many of our children will be using more and more sophisticated switching systems through the rest of their lives really.

Match to pupil need

Assessing individual need is carried out in order to ensure access technology systems are matched to individual need:

The only real modes (switches) we use actually are the momentary, the latched and timed. If you want to get a bit of space and stand back from them (the pupil) quite often

you do use the timed one, because when it stops they've got to make it start again. The momentary one is very useful when they are first discovering that when you touch it, it comes on and the latched is certainly useful when you're working with a child and you want it to run and then you turn it off. The tilt switch isn't consistent enough, it's off when it's like that (demonstrates) on when it's like that and if I can't pick it up, I'm sure the child can't. You can bind it to their wrist, that makes it go on (demonstrates by moving hand), and that makes it go off. It's obvious that inside there is a mercury connection but it's not consistent enough. The other one is a movement switch which works exactly like a burglar alarm at home and there again its either too sensitive, every time they breathe it comes on and off or it's not sensitive enough. We haven't been able to get it wired up to suit the children at all yet really.

Sensory development is specifically targeted:

I want her to be able to transfer her attention from one switch to another so that she will quite happily understand that she can touch a switch to activate perhaps a fan or some music and I also want her to be able to visually track the switch which was why we've got the silver paper (covering the switch).

It is recognized that such activities need to be meaningful for the child:

The point with K is that she will understand that she can make choices and we have a communication board which we put objects of reference (OR) on to and we ask K to reach for the OR. At the moment it's for activities and we try and build into a choice of activities. Give her a choice between two activities and see if she can select the OR off

the board and then immediately receive that activity as a reward. I'm wanting her to understand which switch triggers which reward and then she can make a choice of leisure activity - to give her some control over her life.

.For those pupils with no visual access input through other modalities is considered. Challenging behaviour is seen as the pupil's attempts at communication and ways are sought of channeling such behaviour to result in more appropriate forms of interaction:

Peter has no vision. At one time he used to get very distressed (when he was listening to music) It was clear he was making choices...he would get very distressed if a piece finished that he particularly enjoyed or if someone put on something he really hated, he would scratch his face and get really upset...so it (music) was the most motivating thing we could find to use as a reward in order for him to use a switch. He's very tactile defensive, he doesn't tend to reach out and grasp anything without adult intervention.

He doesn't explore the world around him so that's why my aim for him is to understand that he has some control over the world and to search for that control. So at the moment what we're looking for him to do is understand that he can uncurl his fingers, touch the switch and activate the music reward, enjoy the music and when it stops do the same again.

Staff deployment and development

Because the Unit is staffed as MSI provision there is much use of the role of intervenor. Intervenors are specifically trained to act as facilitators between the child and their

environment. There are also care workers who maintain the link between the residential and school environments. Whilst the majority of teaching is done on a one to one basis pupils are also taught in small groups. Activities such as sensory stories are used in group situations. Staff development is specifically linked to the use of multisensory environment and its technology to promote pupil control:

All new people coming into the school have an induction day and if they are to be allocated to a child in this Unit then we would talk to them about switches and go through the switching system with them. If we are setting up new programmes with the children then their intervenor would come while we explain how to use the switching system and what we're looking for (in terms of a response from the child).

Timetabling

Because the Unit is a relatively small and a self-contained part of the school, it is possible for staff to arrange specific times for all the children. Sessions can be quite long (such as the session on numeracy). Children are given space to explore and where appropriate, the teacher or intervenor will give the child time alone, observed from a distance:

He likes to make his own rules and he likes to discover things in his own time and that's how I believe he's come to progress so much. He spent a lot of time with the switch, triggering switches to get various light rewards because light was most stimulating for him and that seems to have then led him into branching beyond that and looking at the world and deciding he enjoyed it. Since he's become more mobile he's found things he

can use and he goes and gets them and plays with them. He is more motivated by people as well now than he was originally.

Case 4

Case 4 is a maintained specialist provision for severe learning difficulties (SLD) in the Northeast of England. Although the school has been in operation for many years a large fire about eighteen months prior to the research gutted the whole building. The school now operates within a series of portacabins in the grounds of a large comprehensive school. All equipment housed in the original building was destroyed. Staff had had to start again virtually from scratch. However, the LEA, which maintains the school, has a strong track record in special needs and the use of technology. Pupils span a wide ability range and the multisensory environment is used across the school.

Illustration of the physical environment

Although space is at a premium staff have chosen to prioritize the re-development of their multisensory environment. One of the most important considerations for them is the flexibility of equipment:

There was Spacecraft equipment in the old room (multisensory environment) but we didn't tend to move equipment around very much. When we talked about it in our in-service it was laziness rather than lack of confidence or vision as to how we wanted the room to look. The equipment is very easy to move. In fact a lot of the time you don't need to move the equipment you just need to plug it into a different socket. I can go in

with a group of very able students and set it up very differently for an English session from a group of PMLD students going in for a vis stim session or an aromatherapy or a physio

With their previous experience of a multisensory environment there are strong reasons for the prioritization of equipment:

The reason the ball pool was the initial catalyst was that we never had one before and at the time we had a lot of little, physically active children and we wanted some sort of physical environment and also somewhere they could practice walking up steps and sliding down the slide. We went for the ball pool that we did because it is interactive and you could lie in it and press a switch and music would come on giving auditory experiences and tactile ones which is why we went for one with the clear balls and the lighting in the ball pool. And the other thing we particularly wanted was the interactive bubble tube. Which we also didn't have in our old building

Development of the environment is also of ongoing concern:

I would particularly like to create an interactive hydro therapy room environment which is something we have lots of ideas for, also the thing about the interactive room as we have it now is that everything is portable, the soft play equipment and the ball pool bit. I would like something much more permanent. I would like to take the fibre optics further and have a wall of black fibre optic carpet with perhaps luminous hands on so that if the students touch them they are at face level rather than floor level. And the other thing is from this idea (the wall display) creating corridors or walls that are multisensory

Illustrations of policy and planning

The policy document was actually written before we got most of the room. It sparked off from our ideas on what our vision was about the room but the majority of the policy, which refers back to the interactive room, was written by our teacher in the sensory base. She was using that room (in the old school) far more than I was with my group of students who were 16-19. So all that section was actually written by her supported by her nursery nurse staff...we wanted to make it clear to other members of staff – it was not something nice to do on a Friday afternoon – it could be something nice but it was an educational tool.

It (the policy) is reviewed bi-annually as part of our ongoing review of every policy document.

Clarity of Purpose

Staff members are very concerned to use the most appropriate name for the resource:

We were very keen to call it an interactive room; we had a room with similar equipment in our old building and it was a multi-sensory room and we were going to stimulate the students, and we stimulated them to the nth degree, the trouble is that the students weren't aware of what their actions were doing. There was very little connection between "If I press this switch this will happen and I like it, or if I press this switch, this will happen and I don't like it." And we weren't getting any feedback from the students,

so we were very determined from the outset that this room would be educational. We wanted to teach... we wanted to teach the students about cause and effect, about object permanence. We wanted them to have control over their environment and we wanted them to be able to make choices. The equipment that we have put in there is a fun way of doing that. We called it an interactive room and we wanted that put on the door so people knew that. It was a two way process – the room does something and the student does something and they communicate about something – whether they do like it or they don't like it. So it's a two way process between the student and the room.

The interactive room is considered to have potential for a range of curriculum areas:

The first thing that struck me was there was a lot of maths. There was a lot of sequencing and there was a lot of matching number to number. Then there was a lot of technology work, the hard sort with plugs and wires and sockets, and then there was a lot of design and technology work in that they've got to carry a picture in their head of what they want to create, and then use the technology to create it.

There is also the specific pedagogical aim to provide opportunities for learning reinforcement as demonstrated by this example from a Maths session:

What happens a lot with our students is they either plateau or get stuck on a certain skill, for instance colour matching, and it's up to us as teachers to find a creative way of teaching that skill and stopping them getting bored. Really it (the multisensory environment) is really another way of them experiencing colour as we might experience sound – it's quite good fun to sit in the dark. It has far more impact (when creating a

story about ghosts) than it would sitting in a nice sunny classroom. So we're not teaching anything different, we're just using another resource to do it.

Match to pupil need

The use of the interactive room with groups of pupils in subjects such as English (Speaking and Listening) demonstrated the teacher's detailed knowledge of individual needs and their awareness of group dynamics:

They are quite different. If they were left, S and T would do all the talking; W is generally a very quiet girl, generally very under confident but she does remember things better than the other two, and the other two get carried away with their own creativity. And so it's often W that you have to turn to, and this boosts her self esteem because she's generally the one that gets the right answer when you make the other two shut up and listen to what she has to say.

Pupils are guided in their development of ideas in relation to story development but the ownership of the outcome belongs to the group of pupils involved:

The equipment is in the white room, so one of the first things we did was we took all the wheels that go into the solar projector, all the different picture wheels and we took them into the classroom and we looked at them just holding them up to the window and they (the students) decided that they liked the spooky one the best. So that was the catalyst for the rest of the story. So we took that into the interactive room and put that (the space carousel) on the wall and made it still, rather than going around the room because they

thought they might see it better, and then we talked about what else they might see in the forest. So they put the stars on the top by using the mirror ball and just the white spot, and then what you saw today was putting some sort of sound in there. The next stage would be to get more elements and then put it together as a story, with a beginning, a middle and an end.

Although much of the work in the multisensory environment is directed by the ICT co-ordinator there are strong systems in place, which help staff to link work across the school. Communication between staff happens at an initial planning stage and as part of follow up activities. For instance, a story created in the interactive room will be reinforced and developed by class based work using computers. Particular aspects such as spelling will also be highlighted:

Derek does quite a lot of spelling work with them which I was trying to pull out when we were sat in the classroom with the story book 'Weaver'. This was pulling out the threads of using an 'S' to make something a plural and initial blends like 'ship' and 'start' and 'space' – I know we've been working on those initial blends but really what I tend to do is write them down afterwards because you can't always plan when to introduce initial blends, for example when the story is being generated by the students. So you've got to be quite flexible in your way of working. Then I'll write it up and I'll report back to Derek that that's what came out of the story – perhaps he could do some formal work in the classroom with it. But it tends to work that the students have their initial idea. Then that leads you on to you as a teacher with what skills you are going to teach them. You don't always think, "right, I want them to learn these skills, and therefore I will mould this story", I tend to do it the other way around.

The ICT co-ordinator is quite clear about her role and feels that staff are confident in the use of technology:

I tend to have most of the ideas because I move around different classes in my role as Deputy Head and ICT co-ordinator. I take groups of children and work out what we can do and feed that back into the classroom. Sometimes it doesn't work or it all falls apart or it doesn't teach what we want it to teach. From the mistakes come other ideas of things that you can do.

Staff development and deployment

I don't think anyone else in the school is less confident than I am in there (the multisensory environment) we all went through the same in-service training. I regularly induct people into new things. All the teachers use the interactive room and you saw me working with Derek's groups today. One of the nursery nurses would normally carry out those activities. Once I have started off I hand over to the teacher. What often happens is they come back to me and say – we did that session and then we did this, that or this. So then I take it and cascade it to the rest of the staff.

Timetabling

The multisensory resource is used across the school. A considerable amount of group work is undertaken as well as individual sessions for specific pupils. There are obvious limitations to the amount of time which is available and classes are allocated time in consultation with the ICT co-ordinator. However, classrooms are well resourced and

follow up work on classroom based computers for the more able students means that the multisensory environment resource feeds into overall curriculum activities. For those with more complex needs there are strong links with the work undertaken by the sensory co-ordinator.

Case study 5

Case 5 is a newly built, maintained provision for pupils who have sensory impairments and learning difficulties. It is described as a Centre and is set separately within a special school campus and was the largest of the provision visited. The school is located in a fairly deprived area of East London. Residential provision is available for those pupils who require it and is a short distance from the school. The school has a long tradition of working with deafblind pupils. The specialist deafblind Centre was only recently relocated within the new provision. This development was to respond to the changing client group as pupils presented with increasingly more complex needs. Much as one of the other case study schools it has a long history of expertise in the area of communication. It is also a training centre and runs several diploma level courses accredited by a local university and staff development is seen as a priority for the school. New members of staff are expected to undertake accredited training on appointment to the school.

Illustration of the physical environment

Because the school has a large campus divided up into various areas of specialism it also has several forms of multisensory environment. There are two-medium sized

multisensory environments in the new building and one very small area in the older part of the main school. Staff used the opportunity of the new development to reflect on what they wished to build on or change:

We had a lot of sensory equipment that we used in the classes. We used to make blackout rooms or light rooms, little light corners in the classroom. So it was really having a permanent space for those lights and fibre optics in a specialized room.

(We would like to acquire) colour games panel for the dark room, which is more of an intellectual challenge ...children can play games by touching shapes and colours...

We were looking for a range of things that would have a quite dramatic effect that the child could control so it was a question of choosing a range of switches so that every child could hopefully be able to produce that effect themselves and a range of toys that would give not just one single dramatic effect but a lot of different effects. Experience has shown us that some children liked the fibre optics and others were more impressed by the small bubble tube that we had. So we wanted something bigger and more dramatic so I suppose it was also about consumer preferences.

Myself and two other members of staff, we were asked if we would like to do it (set up the environment). We said yes, so basically we got a load of magazines and brochures from certain companies that make goods for special needs. And that was basically it, we just went through the catalogues and we sort of went through the students that we had, and tried to get as much equipment that would be useful to all of them, on the amount of money that was given.

Some of the children have their own switches and bring in their own switches to plug in...some children have a head tilt switch. A wrist tilt switch. The switches that are in there, are very basic switches that any of our children can use, that require a very light touch.

Just a little breath and the microphone is finely tuned to pick up the child's breathing and then they operate the lights and the sounds come on the screen – it is a great favourite.

One interviewee described what her group enjoyed:

This is the favourite, this midibubble, they really like this because when it goes on, it changes colour. It's got to be switched on from up there points to interaction switch), and it's this that they like, the interaction switch, they just lie on this, press it, they really like it, it's like a cuddle bubble thing, and you lay on it and you can feel the vibration as well, they like this because its got the vibration, the sounds and the bubbles and all the colours come up from it.

Funding for the multisensory environment came largely from money donated from a range of different sources but very little from statutory sources:

A certain building society did a charity fund raising day and gave an amount of money.

We were lucky because we had a donation from a parent, in fact three or four donations in a series from the same parent.(in memory) of their child who died, so we had quite a decent budget to allocate to it...They (the parents) just wanted the money to be used for the children, and we knew that they wanted to make a significant commitment to some static sensory rooms ...that decided our budget. Our budget was £13,000 for the equipment. From what M. A. suggested we could afford, we then prioritized, we did actually have Phase 1 and Phase 2...we still have a few items that we're hoping to raise money for over the next few years to add to the light room and the dark room. Some of which will, no doubt, be a lobby for the £1000 colour game panel but then there are also other things that people need in classrooms to develop the same skills which maybe work most dramatically in the sensory room. But it's another £1000 and we couldn't afford that, so we bought a few smaller things.

Illustrations of policy and planning

Multisensory environments are not used by all the children in the school. There is a specific policy on the use of the multisensory environment, which relates to the curriculum. Depending on what level of the curriculum a pupil has reached certain types of approaches are used:

We have essentially a developmental curriculum within the school so we give access to the national curriculum on four distinct levels, and the earliest stages can be described as a sensory curriculum and these are children in our blue and our red classes and we decided to aim the sensory room mainly at them.

There is a plan to further develop the early stages of the curriculum and we are re-writing the formal document to take into account what we've learnt over the last 5 or 6 years since the basic curriculum went into being. And a part of that is sensory stimulation and sensory awareness but obviously that's not just about the sensory room but about activities throughout a child's day...

Staff focus on making the multisensory environment experience meaningful through the structures used:

I guess the other thing is about relating it to the curriculum the child's following rather (means it is more) than twenty minutes excitement once a week, although we could all do with twenty minutes excitement once a week I guess!

Clarity of purpose

The link to everyday life activities and the school development plan is considered to be of key importance:

Because at the base of everything we do is communication and so whatever we do in the sensory room is exactly the same as what we do in the classroom but it just gives us a slightly different environment. Maybe a bit more of an exciting environment for some children, especially those with visual difficulties because there's less interference, less distraction. So it's linked with our SDP the fact that we go to the sensory room and that we go to the soft playroom, that we go to adventure play. The same goals come from our SDP that go right across the curriculum.

Match to individual need

The school population is diverse and departments focus on different forms of specialism. Such specialisms include physical and sensory impairments, autism and challenging behaviour. There are several reasons for not using the multisensory environment with every child:

I think we limit the children who come into the sensory room because of the expensive equipment, although maybe it would be lovely to open it to the wider school. At the moment we don't. We keep it for the children with the more sensory needs. I'm sure that it would be wonderful for many of our other children to come but it would just be a nice experience for them, the goals wouldn't be so specific.

Staff describe individual needs and goals:

H is a little boy with cerebral palsy with limited movements of his arms and legs. The goals were more on the physical side, for him to roll over into the fibre optic (which he loves) and to touch the switch and ask for more...reach for the rods and release them (that's very difficult for children with cerebral palsy).

For Emily, a little girl with vision difficulties it's more focus on tracking...she's not that tuned into cause and effect at the moment, she just taps (the switch) she knows something is happening but she's not really aware that when she taps it comes on and when she taps it goes off.

Sam really has no vision or hearing, with him it's really exploration of an environment. He's really just taking off and getting confident...it's a new environment for him to explore, it's a safe environment so he gets something from it...we take the vibrating mattress with us to the dark room...we don't have it anywhere else in the classroom (or) any other time. For Sam it's moving to another environment, another room, recognizing the routes, the cues. I was worried about it at first...but he really does seem to get something from it, definitely enjoys it and recognizes where he is.

There are strong links to classroom work. One pupil is beginning to gain an understanding of cause and effect from the use of technology in the multisensory environment which the teacher is hoping, will help with general aims:

Liam has been working on the purpose of objects because he sees everything as a toy...(even though) he knows that the bowl is holding his food, he knows the cup is holding his drink there is something in him that just says this is a great toy and if I hold it and bang it I can get a noise from it rather than thinking this is something that has a real function to it.

Allowing sufficient time is important:

I think it can be very easy to spend the whole time in there (the multisensory environment) wanting them to explore and it can be quite difficult. The pauses can sometimes be quite long. I think when you are teaching these children pauses seem terribly long but actually they are so important.

Staff deployment and development

When we first had the two rooms set up I did do some training with our classroom assistants and our teachers as to why we use the sensory room and what's its purpose, what the goals might be for certain children, that it wasn't just go in and switch all the lights on and have a quiet time.

It's come up as we've done training on visual impairment. We've talked about ways of assessing and ways of developing vision and there was quite a bit of discussion about the sensory room that came out then.

I guess what will happen as people get beyond the initial stages of seeing children's attention develop then it should really come up that "Ok, where do we go from here?" Particularly how do you decide that the child has had enough of the sensory room and they need to move on to other things. I think that at the moment it's so new to most of the children and staff that probably the basic training is enough but there will be issues...moving it on beyond an exciting new toy because it has to be more than that at the end of the day.

Parents often see the multisensory environment as a very useful resource and some parents have set their child's bedroom up as a multisensory environment. This is encouraged by manufacturers who sell products such as sensory centres for use at home but there are difficulties:

I did do a session with parents about the light room and the dark room...and explained to them that it wasn't just the answer because quite a few of them said I'll get that for the bedroom then they'll be Ok at night. So there was quite a bit of training to do for people to understand why we use these lights and sound effects but they did think it was something to grab onto (saying) I'll get that because I don't know what toys to buy. (So) I just talked about general things, sensory experiences, walking outside with the child in the buggy, in the pushchair, in the park. The wind and the rain on their faces, and I said that's the most wonderful sensory experience you can have, you don't have to go in the white room...they didn't realize that they're doing sensory things all the time – with their jewelry, their makeup, their perfumes...I said you're doing it – you are the sensory experience – because they (parents) felt I'm not doing all that wonderful sensory stuff, because I haven't got the room (multisensory environment) there.

Because the multisensory environment is used with learners who exhibit challenging behaviours there are particular staffing issues:

If people are away or it's not possible for permanent staff to come down then the room wouldn't be used...we obviously have guidelines (about the use of) supply staff and you wouldn't leave them on their own with certain children.

Things get thrown, things do get broken...they just pick things up and things go flying. It's very dangerous for whoever is in there with them.

Timetabling

Timetabling takes into consideration the specific aims of using the multisensory environment and the fact that there are different departments within the school. Each department covers a different specialism:

Department with the specialism of autism

They get a half-hour slot (each learner) throughout the whole department...but some students may need to use it more than others do. If they're upset we don't like them to use it (the multisensory environment) because we want them to realize that this is a sensory room not a calming room...we wanted them to know the difference...the difference is this is where I come to experience feeling, all the senses, listening...

Department covering sensory impairment

It's mostly a twenty-minute slot – that's for two children and one adult...we allocate the children twenty-minute slots and different classes get an allocation. We work the timetable out together, people bid for times in the sensory room and they have to justify why and when. Some children may get two sessions in there a week because of their needs...that's the one place they respond.

Overall monitoring of the timetable is carried out:

I monitor the teaches' timetables, the children's' programmes – the timetables for children with physical difficulties and there's another member of staff who works with the

MSI teachers and children...so we do monitor the children's goals for six months, then the year and cross reference the curriculum balance to the timetable. This is to ensure that each child has had a variety of activities across the week.

Chapter 14

Lesson Observations

The following three lesson observations are provided in detail to illustrate good practice in the use of interactive technology within the context of multisensory environments. They are a small sample of the range of observations gathered. They have been chosen to bring together various elements of the outcomes of data collection and act as an additional source of evidence. Observations therefore draw on the following observable factors of effectiveness identified in the research: clarity about who the sensory environments are for and what their purpose is; research by staff into what technology is currently being effectively used with particular client groups and types of need; an understanding of how individual needs can be served by different forms of input devices (such as the use of individualised switching systems) and the sharing of information and liaison between staff across the school.

Each of these areas links closely with the features defined as central to the focus of the research. These are an examination of a low incidence population within a defined context; exemplification of a specific phenomenon within specific environments; the

application of a framework for evaluation and the development of guidance material for further dissemination.

Structure of observations

Observations are described following an analysis of video material. Material was filmed in real time using digital recording techniques. This approach allows video images to be imported electronically into computer systems and serves the dual purpose of giving easy access for reference and maximum flexibility. One of the intended outcomes of the research is the production of guidance material and this approach also facilitates the production and dissemination of guidance information through electronic forms.

Because both observation and interview material were recorded using video it has therefore been possible to present observations based on teaching sessions combined with extracts from related interview material. Interviews were recorded following the sessions observed and then transcribed. The use of semi-structured interviews allowed teachers to reflect on both the decision-making which underpinned a particular session and make judgements about how well a session had met their identified aims and objectives. In particular teachers were asked to comment on what they considered the main features of learner needs; lesson aims and objectives; why they had chosen to use a teaching approach based on the use of interactive technology; if they felt the lesson aims and objectives had been achieved and how they monitored and recorded outcomes; the involvement of other staff and any other background information they considered relevant.

Other sources of information

Teachers were also asked to provide examples of planning documentation and any other relevant documentary material. On the basis of the identified factors of good practice, observations are judged by the researcher to highlight two key aspects: a teaching and learning situation in which the needs of the pupil(s) have been clearly identified; that activity and teaching strategies are appropriate to the needs of the child and the intended outcomes of the teaching session. To assist in the analysis of observations a cross-reference observation checklist was used as an aide memoire by the researcher. It was not expected that observations would each illustrate all components of the checklist but rather they would form part of a composite overview.

Figure 5: Cross-reference observation checklist

Focus of question	Context	Factors of effectiveness
• What they considered the main features of learner needs. • The lesson aims and objectives. • Why they had chosen to use a teaching approach based on the use of interactive technology. • If they felt the lesson aims and objectives had been achieved and how they monitored and recorded outcomes. • The involvement of other staff. • Any other background information they considered relevant.	• Illustration of the physical environment • Clarity of purpose • Match to pupil need • staff deployment • timetabling	• Clarity about who the sensory environments are for and what their purpose is. • Research by staff into what technology is currently being effectively used with particular client groups and types of need. • An understanding of how individual needs can be served by different forms of input devices(such as the use of individualised switching systems) • The sharing of information and liaison between staff across the school,

Each lesson observation includes both a description of the lesson as observed followed by an analysis. The purpose of the analysis is to outline key aims and objectives and the specifics of the observation. The observations highlight the following dimensions: examples of how sensory work is based around a focus on individual needs and targets; the use of multisensory environments to provide a particular curriculum focus. They are therefore presented under two headings: 'meeting individual pupil needs' and 'taking a curriculum focus'.

Meeting individual Needs

Lesson Observation 1

At the time of the observation Karen is 11.2yrs she is one of a growing number of pupils described as cortically visually impaired. She has a small amount of peripheral vision. She responds to some visual stimuli and is considered "visually aware" but has an insufficient level of reliable functional vision for general tasks. Karen has a moderate hearing loss in her left ear and profound hearing loss in her right ear. She also has severe physical and learning disabilities and attends a non-maintained school for the deaf. (Case study 3)

Karen enters the room using her walker. The teacher uses speech and physical prompts to assist her. When Karen's balance is stable the teacher goes to the corner of the room and collects a large communication board with a series of Karen's personal objects of reference velcroed onto its surface. Karen is verbally asked and physically prompted by the teacher to pick up the object, which represents work. Karen is hesitant at first. She finds it difficult to grip but does manage to grasp the object. The teacher is aware of Karen's physical difficulty so the object has been chosen after careful consideration of Karen's behaviour and interactions. The teacher praises Karen verbally.

Karen and the teacher (taking the object of reference with them) leave the classroom and go down the corridor to the technology (multisensory) room. Once in the room the teacher undoes the velcro fasteners on the back of Karen's walker.

Karen is verbally and physically prompted to sit down and as she feels the seat at the back of her legs she slowly lowers herself into a sitting position at the table. On the table is a fan with strips of coloured material attached and a tape recorder. Just in front of Karen is a very large round yellow switch. Karen seems used to the routine and immediately presses the switch. The fan produces a flow of air which Karen clearly enjoys (it is a particularly hot day). The reward of the airflow is emphasised by the movement of the material, which gives an additional sensation. Karen is aware that she needs to keep her hand on the switch to maintain the airflow. After a period of six minutes the teacher alerts Karen that she will move the switch further to Karen's right (she is right handed). Karen is asked (verbally) to find the switch. Karen displays some frustration at the request. However, after a short interval Karen uses a scanning movement of her hand and locates the switch. The teacher has covered the surface of the switch with some refractive paper and she encourages Karen to look as well as feel. Karen does move her head as though she might be using some vision but the predominant sensory modality seems to be haptic. The fan is operated and Karen again enjoys the reward. The teacher finishes the session by giving Karen the object of reference, which they take back to the classroom and put back on the board to indicate that activity is now finished.

(Length of observation 35 minutes – no other member of staff is present)

Karen's teacher outlined the following aims and objectives:

Key Aims

"I want her to actually reach out and look and use the vision that she's got to find the switch on the table and to understand that it's that particular switch that is activating the fan and I want to then introduce another switch to see if she will transfer her attention from one switch to another and understand that she's got a choice of having either the fan or music. And last term she actually achieved that and now we're introducing a third switch into the programme...it's basically having a choice of three things that she can then have some control over to activate whatever sensory reward it is and to build up a list of preferences as well so we can start to change the reward. We know she likes the fan and we know she likes the music and we try and get different types of music. We've tried light rewards but she doesn't particularly respond very well but I would like to build up her visual awareness, so we'll persevere with using some sort of visual output."

Session Objectives:

"The point with Karen is that she will understand that she can make choices and we have a communication board which we put objects of reference onto and we ask Karen to reach for the object of reference. At the moment it's for activities, to try and build into a choice of activities then give her a choice between two activities and see if she can select the object of reference off the board and then

immediately receive that activity as a reward and we would do the same with the switches in terms of once she shows a preference of an activity that she enjoys we would then like.. her to understand which switch triggers which reward. Then she can make a choice of a leisure activity or what it was that she wanted, to give her some control over her life."

Analysis

The interview with the teacher combined with the observation reveals a number of important considerations in highlighting good practice within the context of an enhanced sensory environment. There is a clear long-term aim, which provides a frame of reference for the activity both in a short and long term. This gives a strong direction to the teaching. The teacher chooses a sensory outcome that she knows will interest Karen immediately, the fan, as it is a hot day. However, she is also keen to broaden and expand Karen's interests. Additionally the work is progressively cognitively demanding - Karen has to learn to discriminate between switches and the different types of outcome they provide, thus one switch is provided, with the aim to move on to two and finally three. Whilst building on Karen's strengths, the teacher is mindful of the need to also provide opportunities to develop Karen's visual abilities. Karen is prepared for the session through the use of an object of reference. The work is linked to other activities, communication of choice is encouraged in other contexts. The teaching is therefore carefully targeted and designed to meet the *individual*'s needs. This is echoed in the recording system used which enables the teacher to record elements of the task that Karen achieves e.g. reaches for a switch independently, sees a second switch whilst she is involved with the first switch.

Lesson Observation 2

The next observation reveals that good practice in the use of multisensory environments does not always have to be structured in advance, although there still has to be clarity of purpose. This observation reflects the work of the teacher for low vision in designated specialist provision for visual impairment (Case study 2). The pupil featured in the following observation is described as displaying challenging behaviour.

At the time of the observation Pratima is 13yrs old, she attends a school for pupils with visual impairments and additional disabilities. Her teacher describes some of her strengths and needs:

> *"She (Pratima) has quite useful vision. She can identify different people in photographs for instance. She has not made much progress with her speech but she is selecting pictures and is using them as part of her communication. She does make quite a lot of noises but very little speech... She likes using the touch screen on the computer and she will be highly delighted for two or three minutes... She enjoys music activities. She does get quite frustrated. Pratima has not got a great deal of patience and she can be quite destructive with equipment. She will move quite quickly to grab and destroy equipment."*

Observation

The teacher sets up a corner of the large multisensory environment. Pratima is wheeled into the room by a learning support assistant. The teacher shows Pratima a

stick for the xylophone and asks her if she would like to play a tune. Pratima understands and seems keen. Pratima reaches out for the stick and hits the xylophone, which is part of a sensory wall. Pratima has a good sense of rhythm and enjoys the music. She demonstrates her enjoyment by moving her arms in time to the music and vocalising. The teacher asks if she can join in. Pratima vocalises as though in assent. The teacher joins in and together they finish playing the tune.

The teacher then introduces fibre optics which are controlled by a switch and which gently change colour. She asks Pratima if she would like to hold them. Pratima gives a positive vocalisation, Pratima is moved away from the sensory wall towards the fibre optics. Pratima becomes very interested in looking at these lights. She sits in her chair for some 10-15 minutes gently exploring the brightly-lit ends of the fibres; moving the strands, locating and picking up the ends and bringing them close to her eyes and sometimes shaking them. Her mood is calm and inquisitive. She continues to vocalise and responds to the teacher's questions by making a range of slightly differing sounds some of which might be construed as words.

After a few more minutes the teacher gently starts to end this activity to take Pratima back to the music activities within the room. The teacher carefully observes Pratima to judge when to end the session. She asks Pratima if she has finished but the response is unclear. Pratima is persuaded after a few more minutes to release the fibre optics and to be moved in her chair to the music corner. For five minutes the teacher and she play tunes on the xylophone. The teacher taps out a tune and pauses whilst Pratima locates some of the notes. Pratima starts to realize that this marks the end of the fibre optics session and begins to become tense. Pratima starts to show her displeasure vocally and lashes out with her arms. The teacher waits

until she has calmed and returns Pratima to the fibre optics, which immediately absorbs her attention.

(Length of observation 45mins – no other member of staff is present)

Analysis

This session reveals that whilst a session can be planned, (in this instance to develop Pratima's turntaking and imitation skills, capitalising on her love of music), there are important gains from following the child's lead. Contrary to the teacher's expectations of the session Pratima shows less interest in the music and more in the fibre optics. There is little to be gained from extending the music activity and much to be gained from building on Pratima's interest in the fibre optics. For pupils, like Pratima, whose range of interests is restricted, the building of attention and involvement in an activity can be an important first step before the toleration of others and development of shared attention.

One of the essential components of interaction is highlighted in the instance of Pratima and the fibre optics by the teacher's informed flexibility. A multisensory environment can be used to provide opportunities where an adult can join or follow the pupil's interest without taking over the activity. This illustrates the importance of teachers and others being clear about their role in an activity and demonstrates awareness by the teacher of the need for not thinking entirely in terms of planned and structured "lessons" nor entirely that the learning will be child driven. It is also being clear that the role of staff is not merely one of turning on the equipment and leaving the rest to happenstance. One of the outcomes of this carefully monitored approach is that pupils can be empowered to feel more in control.

This observation therefore highlights the following issues: that whilst the use of the sensory environment for a particular pupil is targeted, the pupils' responses guide the pace and structure for the sessions; the importance of staff being clear about their role, that this is more than setting up the environment, it is also about knowing when to intervene and when to step back in a way that will facilitate learning; the importance of staff understanding sensory development and function; the awareness that a multisensory room is a learning environment not purely a safe place to take difficult pupils.

Curriculum Focus

Lesson Observation 3

The final observation comes from a school for pupils with severe learning difficulties (Case 4) where the emphasis was on the pupils themselves creating the event and problem solving how technology could support this. The event is then retold in a dramatised story, written by the pupils themselves.

The teacher sets up the room before the lesson begins. This takes some time. Firstly she checks the equipment and puts out specific connectors so pupils can find the relevant point on the music tape and activate the switches. She also makes sure that she has a copy of the storybook the pupils have developed using the computer.

The lesson begins in normal lighting conditions. There are four Key Stage 3 pupils in the group (two boys and two girls). All pupils have severe learning difficulties. Pupils are encouraged to find the various switches which control lighting and the solar projector as well as the tape recorder. They are also asked to choose from

four models, which represent the characters in the story. The story is about a ghostly walk in the woods.

The teacher uses speech supported by Makaton to ask the pupils questions about what they remember about their story from an earlier lesson. She concentrates on taking them through the story in sequence. As a prompt the pupils refer to their storybook and the objects they have chosen. The teacher then asks the pupils to prepare the lighting. The room is darkened with spotlights of green to represent the forest. Slow and rather somber music introduces the ghost whilst an upbeat jazz piece represents the sound of the group running away. Pupils remain in control of equipment and can alter the pace of the session through their confident use of the technology.

The pupils move from the interactive room to their classroom. They position themselves around a computer. The teacher once again uses questions to trigger their recall. Pupils take it in turn to review and amend their story. This is largely through the use of pictures generated using the computer. The software on the computer allows them to use these images supported by simple text. The emphasis is on group co-operation with each pupil helping to construct his or her aspect of the story. Pupils are enthusiastic and keen to participate.
(Length of observation 1 hour - no other member of staff is present)

The subject specialist technology teacher describes how this happened:

> *"One of the first things we did was we took all the wheels that go into the solar projector, and we took them into the classroom and we looked at them just*

holding them up to the window and they (the students) decided that they liked the spooky one the best. So that was the catalyst for the rest of the story. So we took that into the interactive room and put that (the spooky carousel) on the wall and made it still, rather than going around the room because they thought they might see it better, and then we talked about what else they might see in the wood. So they put the stars on the top by using the mirror ball and just the white spot, and then what you saw today was putting some sort of sound in there. The next stage would be to get more elements and then put it together as a story, with a beginning, a middle and an end."

The teacher then describes how this work was linked to individual teaching targets set by their class teacher, Derek.

"Derek does quite a lot of spelling work with them so I was trying to pull [this] *out when we were sat in the classroom, with the story book 'Weaver'.* [We were] *pulling out the threads of using an 'S' to make something a plural and initial blends.*

I know we've been working on those initial blends but really what I tend to do is write them down afterwards because you can't always plan when to introduce initial blends, for example, when the story is being generated by the students. So you've got to be quite flexible in your way of working. Then I'll write it up and I'll report back to Derek that, that's what came out of the story – perhaps he could do some formal work in the classroom with it. But it tends to work that the students, it's their initial idea, then that leads on to you as a teacher, [to decide] what skills you are going to teach them. You don't always think, right, I want

them to learn these skills, and therefore I will mould this story, I tend to do it the other way around."

Analysis

This session clearly demonstrates the multisensory environment (referred to here as an interactive room) being used as a catalyst, to stimulate pupils' imagination. However it also provides a context for developing pupils' understanding of technology as they problem-solved to record appropriate music and connect the tape recorder to a switch that can provide "spooky" effects at a key part of the story. Again, the work does not occur in a vacuum but is clearly linked to pupils' development of reading and writing skills in the classroom where the session continues. Of particular importance is the extent of communication between the teacher running the session in the interactive room and other staff members. In particular, is the vital link between the work carried out in the interactive room and the English sessions.

This case study highlights the following factors: that multisensory environments can provide an important dramatic context for deepening pupils' understanding across the curriculum; that pupils can be empowered to develop that context themselves through the use of interactive technology; that teachers needs to be flexible in their way of working and knowledgeable about the pupils' individual objectives to ensure that the activity is a vehicle for new learning and curriculum objectives need to be communicated across staff.

Chapter 15

Discussion of findings

In order to discuss the Case studies and any possible cross-case issues which they may highlight, it is necessary to gain some sort of overview. This is achieved by applying the Framework of Effectiveness to each of the Case studies. As described earlier, the Framework derives from coalescence between the indicators of effective pedagogy outlined in the TTA research and those indicators of good practice from the focus group response. This process involves clustering interview material (Robson, 1993 p.399) by code across all Case studies in order to identify general issues pertaining to the Framework. This is an important next step in setting case study material within a broader context. Yin (1994, p.48) has described this approach as a form of theoretical replication.

The physical environment: effective technical back up and support to overcome any difficulties encountered and the provision of adequate resources.

The Physical Environment

The five Case studies illustrate a range of multisensory environments. The naming of such environments is considered by the staff interviewed to give important messages about concepts behind their use. Names are therefore diverse and descriptive and include the following:

- The Studio
- Interactive Room
- Sensory Room
- The White Room

There is also the further implicit purpose of matching name to context. Thus, the mainstream school wished to provide a name, which could be 'owned' by the whole school and located within the everyday experience of staff and pupils and so arrived at the name 'The Studio'. Whereas one of the special schools wanted to emphasise the

importance of interaction by calling their space 'The Interactive Room'. Other names flag up their specialist context. In the future, as more mainstream schools are designed to accommodate a greater diversity of pupil need, the relationship between naming and ownership will need to be fully explored.

Space

The amount of space provided for multisensory environments varies in the case studies from a relatively small (cupboard-like) space to the size of a small hall. To a large extent this was happenstance. However, in one of the cases a new school was planned and built to include a specifically designed sensory environment. In this instance considerable thought had been given to accessibility and soundproofing. Multisensory environments are often isolated from other teaching environments. This isolation has both positive and negative outcomes. On the one hand there are the advantages of a distraction free area away from excessive ambient noise (so often a problem for learners with sensory impairments) but on the negative side, isolation may inhibit the freedom of pupils to explore independently (because staff cannot safely withdraw and observe). There are also child protection issues, which are made more pertinent when staff are confined in isolated and closed environments, often with learners who require significant personal care.

Development

What is of key importance in all cases is the level of involvement of senior management in the development of both the environment and its technology. Thus a feature of effectiveness is the sustained involvement of senior managers and the ongoing support from other colleagues. This finding is reinforced by the TTA research:

1. *The role of the headteacher in supporting such development work was one important factor. This might be only in terms of acknowledging it as a priority. Alternatively some heads gave additional support to teachers by providing extra resources or release time.*
2. *The support of other colleagues in the school* (p.17)

Resources

The range of technological resources available to case study schools is enormous. Some schools have a long history of purchasing equipment and so collections may have been built up over many years. Other schools are at the beginning of what represents a new and often exciting start to their use of multisensory technology. Examples of technology equipment include: effect projectors and accessories; a range of bubbletubes; fibre optics; infinity tunnels; ultra violet light; soundbeams; desktop PC systems.

These are used to achieve outcomes such as: visual effects; tactile rewards; wind and vibration; musical creation and softplay

Input Devices

The case study schools use a number of input devices. Porter and Wrench (1998) have identified a typical group: These *include input systems which produce discrete signals to the device such as switches; spatially responsive mechanisms such as touch screen and soundbeam; and multiple input devices such as a standard computer keyboard or an overlay or concept keyboard. (p.*24)

Switches are the most common forms of input devices used by the Case study schools within multisensory environments. In general classroom environments there is evidence

of the use of the whole range of input devices. Of utmost importance overall to Case study schools is that the input device has been appropriately matched to the needs of the learner.

Funding

Funding seems to come largely from non-statutory sources in case study schools. The only instance where funding came from a statutory source is in the Case of the mainstream school. It is worth noting that this is seen as part of a general wish to upgrade ICT facilities by the LEA (following a restructuring and the creation of unitary authorities). Changes in funding structures (such as greater devolvement) may well have a significant effect on the ability of schools in the future to purchase expensive and often customised technology. Case study schools all report some degree of difficulty with technical back up and maintenance of equipment and multisensory environment facilities.

Technical Backup

Health and safety issues are considered an ongoing problem by at least one school. Guidelines on the use of technology (such as Ultra Violet Light) also vary. The major recourse for case study schools to redress any difficulty with equipment is through direct contact with the manufacturer. Guidance at an LEA level (where available to special schools) relates to network systems provided by statutory funding and thus has little relevance to the technology in general use within classroom and multisensory environments. There is no difference in the levels of difficulty reported by Case study schools in the maintained or non-maintained sectors. Schools from either sector face

similar difficulties. This is a problem for schools in general. The TTA research (1999 p.64) highlights the following issues:

As new equipment or operating systems are introduced basic start-up issues are growing. This suggests the need for more practical support in each school to facilitate the changes.

Expectations of technology have increased. However, the technical problems have also increased along with the sophistication of both machines and software. When things go wrong (as they inevitably do), the need for immediate, or at least rapid, technical support is crucial.

The cost of buying-in technical support is high, particularly for (small) schools. This has meant that some schools have chosen a lower level of service agreement than they needed. This in turn leads to more problems, which then become part of the vicious circle.

Factors of Effectiveness

Case study schools illustrate a number of factors, which are likely to lead to effective practice in the development of multisensory environments and their technology. These factors include: clarity about who the multisensory environments are for and what their purpose is; research by staff into what technology is currently being effectively used with particular client groups and types of need; an understanding of how individual needs can be served by different forms of input devices (such as the use of individualized switching systems); the sharing of information and liaison between staff across the school. Such liaison to include information derived from therapists on the use of technology to enable

higher levels of independence and physical access by learners; the development of recording systems (such as the use of sensory passports) which can be easily used and "belong to the child" and its family; prioritization of the purchase of technology based on a sound knowledge of the needs of pupils and the skills of staff.

Clarity of purpose: clear identification of how ICT will be used to meet specific objectives within subjects of the curriculum to improve pupils' attainment.

Case studies reveal how multisensory environments may be utilized with a particular curriculum focus. Instead of therefore *starting* from a consideration of individual needs, environments are created to support the delivery of the curriculum. Examples of this approach are more obvious in relation to work carried out with higher attaining groups of learners but examples are also to be found in work carried out across ability ranges. What the case studies highlight overall is the very strong belief amongst case study teachers in the importance of pupil empowerment. This belief is evident in the planning of teachers both for individual work with learners and group work around literacy and dramatic reconstructions. Teachers often refer to their teaching objective as an intention to encourage pupils to feel in control. Findings from the TTA (1999) research indicate that both the quantity and quality of pupil's ICT experience tended to be high when teachers in mainstream also favoured this view:

Teachers who value pupil empowerment as learners are likely to view drill and practice software unfavourably, unless features which allow a high level of pupil choice are built in. Subject specific software is likely to appeal to such teachers. For example talking books where children have a choice of level or strategy. (p.93)

This was in contrast to those teachers who favoured direction rather than pupil choice:

Teachers who emphasized teacher direction rather than pupil choice tended to have a lower level of self-rated ICT competence and gave much lower estimates of pupil time per pupil per week. (p.93)

The importance of pupil empowerment is clearly demonstrated by the use of the multisensory environments by teachers in Case study schools to stimulate the imagination and involvement of groups of learners as well as work with individuals. The outcomes of this approach can be applied in different ways for particular learners. Some learners will use the opportunity for follow-up classroom computer use of subject-specific software (for instance, linking spelling with storytelling). For those learners at the early stages of the national curriculum or following a developmental curriculum, pupil empowerment is promoted as a vehicle for the development of choicemaking and the beginnings of shared attention (to lead to outcomes: speaking and listening). The ability to make choices is thus viewed as an integral component of early communication and interaction and is therefore the rationale for much work carried out in a multisensory environment.

Policy and planning: a planned match of pedagogy with the identified purpose of ICT activities and learning outcomes.

Technology offers teachers the possibility of movement between a variety of pedagogic strategies. For the teachers in the case study schools the importance of technology within the context of multisensory environments is twofold. Firstly it allows teachers to reinforce learning and secondly teachers believe that it increases levels of learner motivation. Within the overall context of the curriculum, teaching approaches cover the range of organizational strategies. These strategies can be aligned to those exemplified in the Scottish Office SEN guidance on curriculum access and are grouped in this guidance under the following headings (based on 5-14 Curriculum, Scottish Office p.12):

- Individualization – through the use of an individualized education plan (IEP)
- Adaptation – through provision of alternative and augmentative means of communication
- Enhancement – where learners work to common goals but with differentiated tasks
- Elaboration – the use of task analysis to break down learning experiences into detailed, manageable targets.

However, the most commonly adopted approaches cited by teachers are ones which allow the learner to feel in control. For instance, a multisensory environment can be used to provide opportunities where an adult can join or follow the learner's interest without taking over the activity. However, staff members are quite clear about their role in an activity, neither thinking entirely in terms of planned and structured "lessons" nor entirely that the learning will be child driven and that their role is merely one of turning on the equipment and leaving the rest to happenstance! This type of strategy indicates the use of technology as a form of scaffolding around which curriculum activities can be molded. Such an approach is described by Bozic and Murdoch (1996):

Interestingly, within a functional system of child, educator and technology, the responsibility for scaffolding a child's progress is not restricted to the educator. The technology can be seen to perform a scaffolding function, albeit through the careful management of the teacher. (p.9)

Technology is often used to enhance the range of teaching strategies. Teachers in the Case study schools can thus be seen to capitalize on the advantages of technology highlighted as characteristics of effectiveness in TTA research (my italics):

- The capacity of technology to present or represent ideas or stimulation in multiple forms – for example: *the use of atmospheric enhancement through lighting, sound, and movement.*
- The facility of technology for providing feedback to pupils as they were working – for example: *the use of switch access to facilitate understanding of cause and effect via the outcome of a meaningful reward.*

- The capacity of technology to present information or stimulation in easily changed forms – for example: *the popularity of equipment such as the interactive bubble tube which can be programmed to provide different movement or colour under the control of the learner and through a range of input devices(adapted from TTA research p.8)*

A match between pedagogy, the identified purpose of ICT activities and learning outcomes must also take into account the context of the multisensory environment. The effective use of the multisensory environment is likely to mean that whilst the use of the sensory environment for a particular pupil is targeted, the pupils' responses guide the pace and structure for the sessions. Staff members are clear about their role, in that it is more than setting up the environment, it is also about knowing when to intervene and when to step back in a way that will facilitate learning. Staff understand sensory development, function, and can identify and use appropriate forms of assessment. Staff understand that the multisensory room is a learning environment, not purely a safe place to take difficult pupils. Staff recognize that multisensory environments can provide an important dramatic context for deepening pupils' understanding across the curriculum; pupils can be empowered to develop that context themselves through the use of interactive technology. The teacher needs to be flexible in his or her way of working and knowledgeable about the pupils' individual objectives to ensure that the activity is a vehicle for new learning. Work begun in the multisensory environment can be transferred to other forms of classroom based learning via the medium of computers and appropriate subject focused software.

Match to pupil need: Ensuring that pupils have adequate ICT skills to achieve specific objectives

TTA research highlights the importance of viewing the use of ICT as a pedagogical strategy. This was also evident in the work of Case study teachers who clearly use ICT as an explicit pedagogical strategy (instead of ICT activities being considered as secondary or additional). There is also a strong emphasis on active rather than passive learning within Case study schools. In the main there is more focused individual work with ICT, unless this is organizationally or pedagogically inappropriate. Learners are gradually introduced to new forms of technology. The use of a routine underpins many teaching approaches used by the Case study teachers. This means that activities can be carefully monitored and the response by learners evaluated within a specific context over a considerable period of time. However, reinforcement is achieved not only through repetition of activity but through the choice of ICT activities. Extension work in ICT is also closely linked to the outcomes of monitoring of pupil response. Not all learners will be able to generalize their learning outcomes but motivation is maintained through the appropriate choice of equipment. For those learners with degenerative conditions who are unlikely to make progress in a typical sense, technology uniquely offered Case study schools opportunities for innovative solutions. These met the needs of these pupils by

extending ways of balancing familiarity with novelty, whilst at the same time giving the teacher the scope to reduce levels of complexity.

The importance of managing all these factors so those learners are given access to appropriate forms of technology is demonstrated by Case study teachers in the following aspects of their teaching. There is a clear long-term aim, which provides a frame of reference for an activity both in a short and long term. This provides direction to the teaching. The teacher chooses outcomes that she knows will engage the learner immediately. However, the teacher is also keen to broaden and expand the interest of the learner through the use of technology. Additionally the work is progressively cognitively demanding – for instance, a student has to learn to discriminate between different forms of the same input devices such as switches and the different types of outcome they provide, thus one type of switch is provided, then two and finally three. Whilst building on the student's ICT strengths, the teacher is mindful of the need to also provide opportunities to develop other abilities. The student is adequately prepared by familiarity with the ICT used and through a range of meta-strategies designed to promote interaction, such as the use of objects of reference. The use of technology is linked to other activities, communication of choice is encouraged in other contexts. The teaching is therefore carefully targeted and designed to meet the *individual*'s needs. This is echoed in recording systems, which enable teachers to record elements of the ICT task, that the student achieves e.g. reaches for a touch screen independently.

Staff deployment and development: matching starting points for development for particular teachers in accordance with their preferred teaching styles and approaches.

Staff in the Case study schools came from a variety of backgrounds and fulfilled different functions within their schools. Approaches to staff development and deployment also varied. It is worth noting that the promotion of effective practice and effective development were the focus of much concern in the TTA project which identifies the following important points:

The main issues in accurately describing any process of change in teaching are in describing the complex interplay between different factors in any particular teacher's development. These are made more complex...by the relationship with ICT which itself demands both personal and pedagogical technical skills and competence. (p.99)

Teachers in specialist provision are often faced with a multitude of unknowns. Many will not have received training in the particular forms of need the school is designated to meet, whilst others will feel isolated from mainstream initiatives in technology. Pedagogic styles will also be wide. Staff development activities in Case study schools therefore concentrated on raising general levels of competence in the use of ICT. It was

reasoned that teachers would then be able to make the most informed choice of strategy and technology.

Because of the involvement in ICT by senior members of staff in the Case study Schools there is a high level of expertise in relation to pupil need and considerable confidence in the use of technology. This is particularly true in the case study school where the senior manager is also the ICT Co-ordinator. The attitude of staff towards ICT and their willingness to engage with new challenges are seen as positive factors by senior members of staff in all the Case study schools. Considerable emphasis is placed on induction for new members of staff and for others coming into the school (learning support assistants, volunteers). Training focused on not only how to use specific pieces of equipment but more importantly why they were being used and how collaboration could be achieved. This meant that staff development also addressed issues such as: the use of observation; the preferred mode of communication for individuals; health and safety issues; the use of ICT to record progress and celebrate achievement; sensory functioning and stimulation; curriculum aims and objectives; assessment and recording within the multisensory environment; the use of ICT to prepare teaching resources; and demonstrating why ICT should or should not, be used.

Manufacturers and suppliers of equipment are seen as major providers of introductory training and also undertake the additional function of acting as advocates for particular pieces of equipment. This is seen as an advantage but also an area of potential difficulty. Conflicts of interest can easily arise and information about more appropriate forms of technology might possibly be withheld by manufacturers keen to promote their own products.

Staff Deployment

Deployment and availability of staff are key factors in the effective use of multisensory environments. Much of the work carried out in the Case study schools relies on the availability of 1:1 staffing. Other types of pupil grouping involved collaborative work (as in storytelling). In this type of approach one member of staff was involved, often with support from a learning support assistant (LSA). Nursery nurses and LSAs were sometimes put in charge of one or two pupils using a multisensory environment. In these instances support staff followed programmes developed by teachers. Members of staff in Case study schools also emphasized the importance of teamwork. This meant that development activities are also targeted to include therapists and parents/carers and staff deployment also takes account of the possible use of multisensory environments by other professionals and parents.

Timetabling: adequate access to, and intensity of use of the necessary equipment by pupils and teachers.

Although the case study schools are, in the main, particularly well resourced there are still issues about how much access individual pupils have to particular pieces of equipment or to the multisensory environment itself. Because most of the ICT equipment used by schools did not come from statutory sources there is no generalizable baseline of entitlement. Whilst it is commonplace for pupils with sensory impairments (through the process of Statementing) to be given a range of ICT equipment to facilitate their inclusion in mainstream schools, this is not the experience of pupils entering the special school environments of the case studies (with the exception of the mainstream school). Some individual pupils do have access to personalized switch systems but in the main switches were held as a central or class-based resource. Other forms of technology are available in classrooms but more often equipment (other than desktop computers) is centralized within the multisensory environment. Timetabling has to take account of the balance between individual and group need, as well as the availability of staff. Different considerations are used in the allocation of time and access to equipment included: degree and type of sensory impairment; level of physical needs; need for some learners to

reasoned that teachers would then be able to make the most informed choice of strategy and technology.

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have access to intensive and prolonged sessions; class groupings; level of staffing required for a particular session; and vulnerability of equipment (in relation to pupils with challenging behaviours).

Time

Time is probably the most critical factor in the education of children with complex and profound needs. Incidental learning is likely to be minimal and speed of processing of information may also be slower than is typically the case. Activities can also be more tiring for learners with sensory and physical disabilities. Any change of activity may require more lead-in and completion time to reduce possible anxiety and confusion. Technology provides tremendous possibilities for increased control by the learner and also access to a world of enhanced experience. However, time remains crucial if the opportunities which technology offers are going to be fully realized by learners. Rejection of new experiences is often a starting point for many learners traumatized by the bewildering world around them. Tactile defensiveness can significantly hinder the use of equipment by learners. Contact with others facing similar challenges also demands time. Case study schools illustrated the patience and thought required by dedicated staff. They also illustrate how awareness by senior management can make time available to enable developments to take place and information to be cascaded to staff.

Chapter 16

The development of guidelines on good practice in the use of interactive technology within multisensory environments.

Highlighted in the research findings is the importance of staff development. Transcripts from the focus group interviews reveal a concern for the need to enhance staff expertise. In recognition of this concern case study schools were chosen to illustrate the use of interactive technology in multisensory environments by confident and 'pro-ICT' staff. In particular the research findings note that senior members of staff in all the case study schools see the attitude of staff and their willingness to engage with new challenges as positive factors.

This is in recognition that:

Teachers in specialist provision are often faced with a multitude of unknowns. Many will not have received training in the particular forms of need the school is designated to

meet, whilst others will feel isolated from initiatives in mainstream. Staff development activities in Case study schools therefore concentrated on raising general levels of competence in the use of ICT.

Training focused on not only how to use specific pieces of equipment but more importantly why they were being used and how collaboration could be achieved. This meant that staff development also addressed issues such as the use of observation; the preferred mode of communication for individuals; health and safety issues; the use of ICT to record progress and celebrate achievement; sensory function and stimulation; curriculum aims and objectives; assessment and recording within the context of the multisensory environment; the use of ICT to prepare teaching resources; and how to demonstrate why ICT should or should not, be used.

In the light of the importance of staff development one of the aims of the research is the development of guidance material. This addresses the need to reach potentially isolated staff working in a wide range of settings (including mainstream). It also recognises the need to facilitate flexible and cost-effective access to guidance material and the importance of stressing the interactive aspects of technology.

As a first step it was important to revisit the themes identified by the focus group and which underpin the Framework of Effectiveness. These initial themes are: illustration of the physical environment; clarity of purpose; policy and planning; match to pupil need; staff deployment; timetabling.

The next step was to bring these initial themes together with the research findings in a form that would bring together overarching and sub-themes. This process would therefore recognise a combination of 'given' themes (derived from focus group material) and 'in-vivo' themes (derived directly form transcript material) as sources of data. These could then be evidenced by the use of digital material, which covers: interviews with staff; examples of equipment; lesson observations; and text based material, which includes: transcripts of interviews and other documentary evidence

Presentation and Dissemination

With the large amount of material which could be included as guidance, the sheer manageability of its presentation is an issue. Yin (1994, p.133) gives a helpful prompt in stressing the need for innovative forms of presentation:

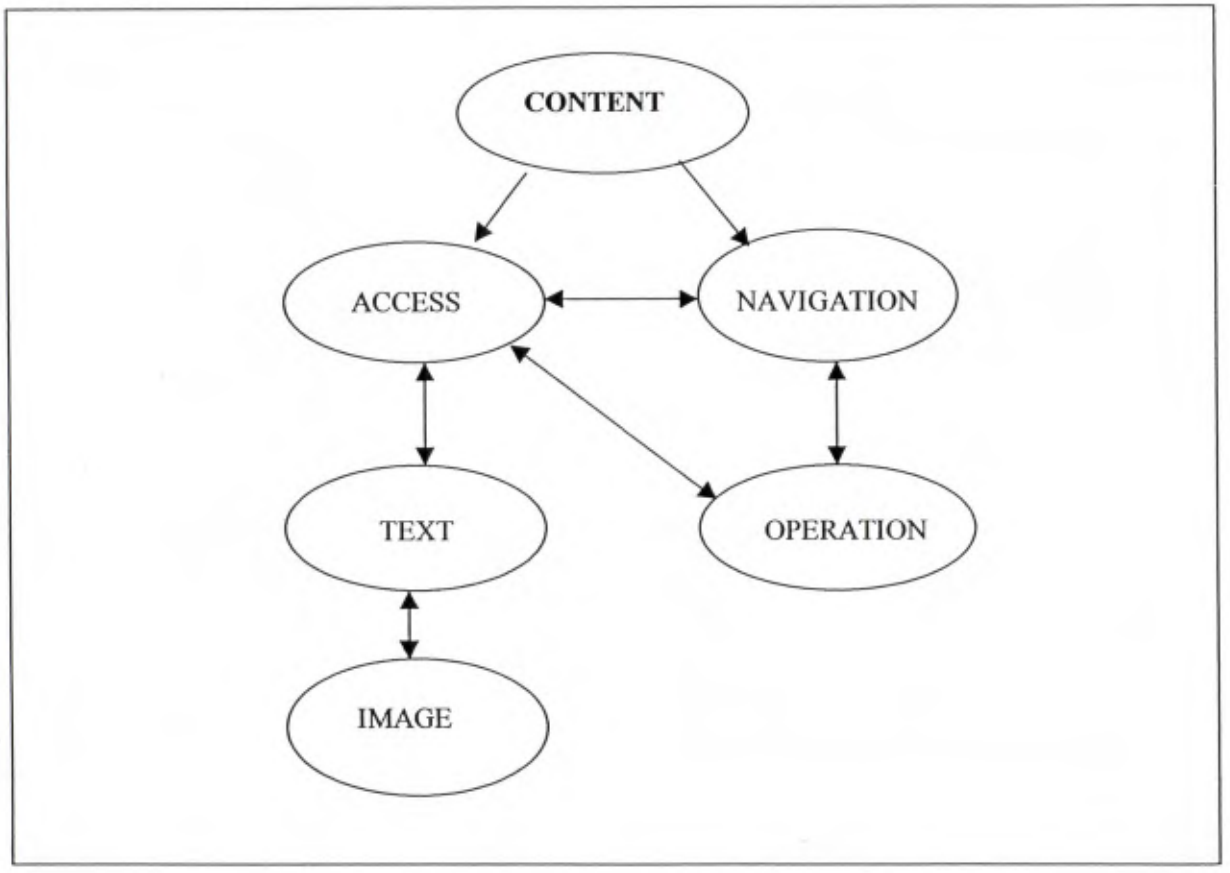
The most desirable innovations should deal with a major disadvantage of the written case study – its bulkiness and length. In such a form, the case study information is being stored in an inefficient and cumbersome manner. Imagine a comparison between the review of some survey data and of some case study data. For the former a computer tape or disk would contain a large amount of survey material and be susceptible to intensive and precise probes; for the latter, a similar amount of information is likely to require a huge amount of text, an inefficient retrieval system, and substantial time for review.

However, analysis of interview material combined with lesson observations meant that material was already grouped in a way which facilitated dissemination. The next step was to determine, 'How'. There were a number of options. Text could have been provided with images drawn from the research and this could have been produced in a

book form. Standard video material could have been produced combined with training materials in text form. But, bearing in mind Yin's warning about the need to identify more innovative approaches and recognising the advantages of the availability of digital material there was another option.

The preferred option, which would meet requirements for flexibility and facilitate access to a variety of users, was the production of a CD-ROM. This would allow for teachers and others to interact with the material. It would also allow for the availability of access routes for those with particular needs such as audio description or enhanced visual text. Guidance material could then be manipulated to suit the individual who might be visually or hearing impaired. Looking back over notes from the focus group this seemed an appropriate route forward. Additionally it capitalized on the availability of material in a digital and cost effective format. The following diagram illustrates the areas of consideration.

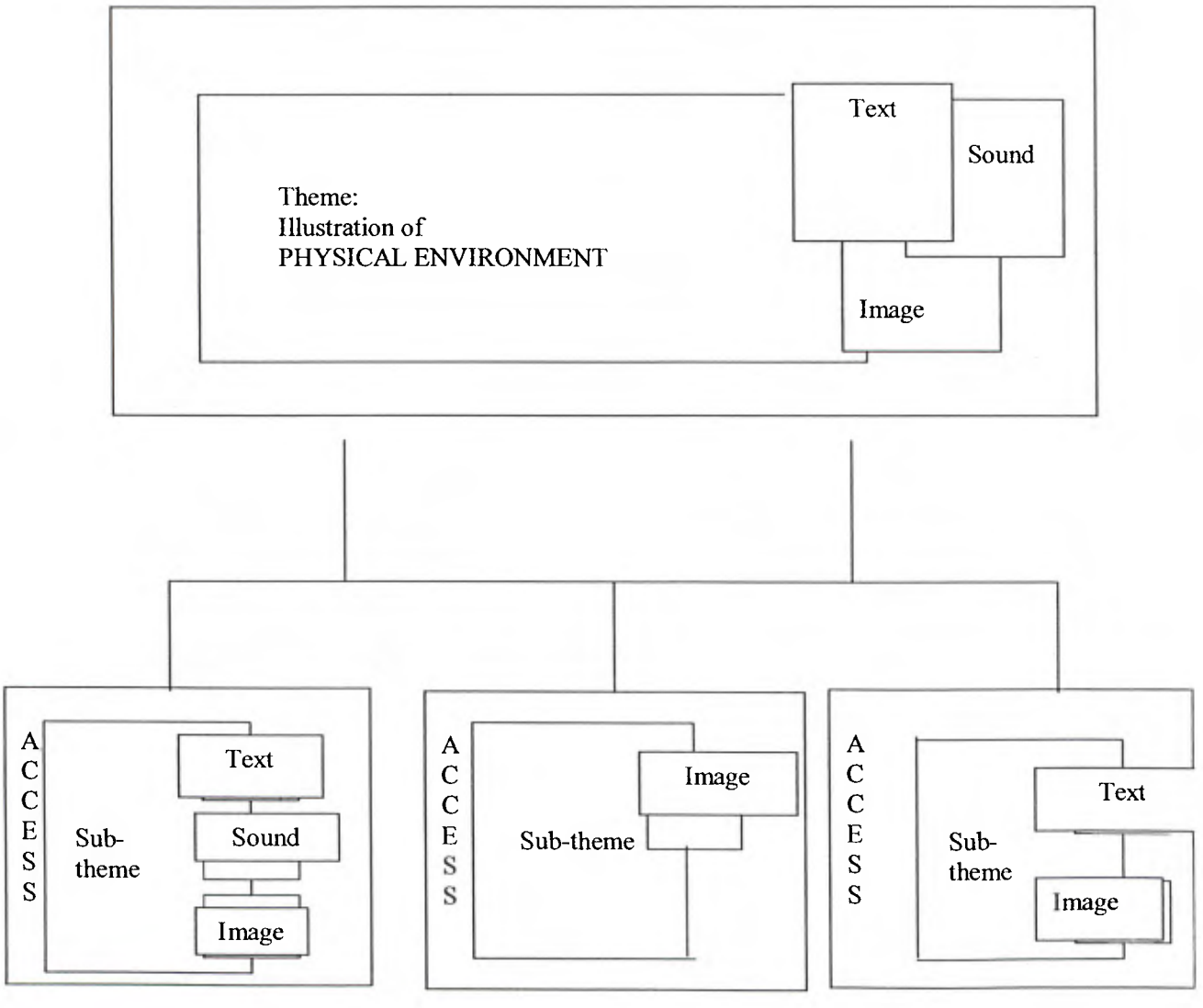
Figure 6: Initial Structure of the interactive CD



It was also important to develop a structure, which allowed for easy navigation between the various aspects of content. Guidance material could therefore recognize the role of ICT across different aspects of teaching and learning. The following diagram illustrates how one of the themes from the research was divided across its sub-themes (extrapolated from the initial coding of interview transcripts). Each of the sub-themes contains a variety of elements. Some may be text based supported by a voiceover, whilst others

contain a balance between image, text or sound. The route through and the combination of elements are dependent on individual choice. Thus guidance material translates theory into practice via the use of interactive technology.

Figure 7: Organisation of guidance content – example: Illustration of Physical Environment



Chapter 17

Summary and conclusions

The five case study schools provided an important opportunity for practice to be observed in a variety of settings and the chance to interview staff working with learners in different forms of provision. One of the initial research questions focused on the issue of the use of multisensory environments. At the beginning of the research it had been assumed that multisensory environments were still confined to specialist schools. It was therefore particularly interesting that the focus group suggested one of the five cases should be a mainstream school. This reflects changes in the external environment. There are now clear movements in inclusion which increase the likelihood of multisensory environments being found in mainstream schools. In the short term this is more likely to occur within the primary phase but with the implementation of the SEN and Disability Rights in Education Bill (2000) there may be an extension of this kind of resource to secondary and further education (in addition to its greater availability within the primary phase). The subsequent expanding context of the use of ICT is likely to be both challenging and exciting for those involved in education.

At the beginning of the research certain assumptions were made about the client group addressed in the study. These were that they have a need for enhanced or augmentative forms of communication, enhanced or alternative input through the sensory modalities and greater environmental control through access to appropriate forms of technology.

The time spent in case study schools during the research supported these initial assumptions but also found a growing use of multisensory environments by a wider client group (in addition to more intensive use by particular sub-groups). This may be for a variety of reasons. The range and flexibility of available technology has increased. Staff confidence in the use of technology has developed and consequently members of staff are more experimental in its use of technology. The role of specialist provision is changing and the remaining provision often has to accommodate a wider ability range (including a growing percentage of pupils with autism and challenging behaviour). The development of inclusion to accommodate a greater diversity of needs within mainstream has meant mainstream links have increased, thus special school teachers are more aware of mainstream initiatives (and conversely mainstream teachers are more aware of specialist technology). The reorganization of LEA responsibilities and changes in funding structures has given individual schools more autonomy.

There is less emphasis in case study schools than might have been expected on the use of multisensory environments for relaxation and more concern that they are seen within the context of the curriculum. Members of staff are confident about technology and consider its limitations frankly. In the light of the changing role for special schools outlined in the Green Paper and supported in the new Education Act there is a growing need for links between specialist provision and mainstream schools to include a review of all specialist

teaching environments both in mainstream and special schools and a mapping of the use of technology across LEAs. This need is emphasized through the wording of the SEN and Disability Rights in Education Bill (Section 2):

2. *This legislation makes it unlawful for education providers to discriminate against a disabled child by:*

a. *treating a disabled child less favourably on the grounds of their disability than a non-disabled child, without justification, in the arrangements made for the provision of education;*

b. *failing to take reasonable steps to change any policies, practices or procedures which place a disabled child at a substantial disadvantage compared to a non-disabled child; and*

c. *failing to take reasonable steps to provide education using a reasonable alternative method where a physical feature places a disabled child at a substantial disadvantage compared to a non-disabled child.*

There is also need to include the non-maintained sector and thus reduce its potential isolation.

In addition to the data collected from case study schools this research has drawn on the outcomes of a recent TTA research project. The TTA research did not look at specialist provision but confined itself to mainstream schools in the primary phase. This was particularly useful as primary schools face similar issues as their specialist counterparts in terms of size and budgetary constraints. The data produced by the TTA research was extremely helpful in allowing the researcher to set the outcomes of this research within a

more inclusive and broad framework. It was also important for the researcher to be able to reflect on TTA Specialist Standard documentation and look across the characteristics of effective pedagogy both in ICT and in relation to severe, complex and profound needs. To a large extent this set the scene for the overarching question posed by the research. This key question probed how mainstream developments in the use of technology could be better harnessed for learners with complex and often profound disabilities.

An examination of TTA research revealed many commonalties in the issues facing teachers using new technologies. Of particular interest is the emphasis placed in the TTA research on the relationship between teachers' thinking, their classroom practice and their engagement with ICT. Unsurprisingly the TTA research found that pro-ICT teachers were keen on the use of ICT within education and reported that ICT made them feel good about their teaching. The TTA also found strong evidence that pro-ICT teachers gave priority to teaching children ICT skills and used more targeted assessment (p.92). This finding is echoed in the Case study schools where pro-ICT teachers responded enthusiastically to the invitation to take part in this research and clearly demonstrated that their interest and involvement in ICT were likely to foster ongoing links with mainstream developments in the use of ICT. Without the positive outlook of such pro-ICT teachers there would be a possibility of multisensory environments becoming, in the future, a technological cul-de-sac.

The role of humanistic psychology emerges in this research, as an early influence on what later became multisensory environments. Case study teachers tended to use technology as a meta-strategy aimed at empowering pupils to take control of their learning. This link with humanistic psychology reflects a belief in human potential. This

is regardless of the level of learner need and opens the way for innovative solutions to individual learning needs. Therefore technology can be used to *give teachers and pupils access to control over everyday solutions which would normally be outside their everyday experience (TTA: CD-ROM 2000).*

Assessment plays an important role in the effective use of technology within multisensory environments and helps to strike a balance between the child-led and the developmental repertoires identified by Bozic and described earlier in this research. Learner progress is therefore often monitored through the teachers' own awareness of the *interactive way in which information is stored, processed and presented can enable teachers and pupils to communicate effectively with others (TTA: CD-ROM).* There are examples of teachers in case study schools using digital recording as a means of charting pupil progress. Subsequently they downloaded these images onto records of achievement. This use of technology brings assessment and outcome together in a format which is meaningful to learners and their families and is important in the formulation of relevant sensory and curriculum targets. There is also recognition by teachers that access to computer functions might fundamentally change their expectations. The recent SEN guidance from TTA (March 2000) can be seen as providing a postscript to the outcomes of this research. This guidance points to the speed and automatic functions of ICT. This flexibility and freedom can enable teachers to demonstrate, explore or explain aspects of their teaching and pupils' learning more effectively. The flexibility of technology is also highlighted in the TTA guidance and accords with the findings of the research. Good practice in case study schools illustrated that teachers took full advantage of the nature of information storage, processing and presentation enabled by technology. This allowed activities to be changed easily for individual and group needs. Specifically for the pupils

in case study schools good practice illustrates the use of technology in order to explore sequences of actions and link the sensing of events with the control of actions. This is in order to achieve the following aims:

to make things happen;

to promote communication and interaction between person and person;

with the ultimate aim;

to ensure multisensory environments are used as a specialist resource for curriculum access with clarity of purpose and effective pedagogy.

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Appendix 1

Focus Group Information

- **Flipchart and group notes**
- **Feedback notes**
- **List of codes based on flip chart notes**

Multisensory Environments- Flip Chart Notes on Group Feedback

organization
flexibility

1. Physical environment- size and reducing and increasing Environment

2. Need for planning, policy and development which is keyed into the development of the school Policy and Planning

3. Clarity of purpose- specific as in IEP for example choice, therapeutic or as part of the curriculum for particular sessions. Need to ensure that this approach- which may be themed takes account of the continuity of understanding, individual must not be lost in the narrative. Choicemaking / curriculum

4. Time is important for:
- preparation- e.g. use of objects of reference to indicate going to the room, working with others
- doing- so child has time to adjust to what's happening
- sharing with others child, group staff between classes, parents/sibs, academic, inspectors, visitors.

5. Planned and structured approach is important but not at the expense of incidental learning. (incidental learning)

6. Importance of experience being child led- inclusion of pupils in experiences (rather than totally theme led or being technology driven)

7. Needs to take account of child's expectation of routine

child (expectation)
Routine
Interaction

8. Professional development is key to ensure staff know about the role of the sense, positioning and different contexts for learning

8. Evaluation- against the purposes and evidence based, (danger of being highly subjective)

9. Capitalise on the value of interaction with a reliable outcome and the role of the social context

10. Guard against the danger of using multisensory approach with clutter of confusing stimuli. Where it is important to know and assess child to be aware of the order and mode of impact. Dave Wood article: "One sense at a time"

11. In residential settings in particular, there could be confusion about the room being used for very different purposes/different set of rules operating.

12. There should be a co-ordinator to share and inform staff, to take a lead on recording and planning. Question whether this should be a separate person or link across the curriculum.

13. Staffing levels may impact on the activities can carry out and may dictate whether or not the room is used.

14. Health and safety issues are important including the use of ultraviolet light, ventilation and hygiene. Toys that are used are often tested with 0-6mths baby. There are also child protection issues not least arising from small space and proximity and secluded nature of settings.

15. Attitudes and perceptions of others where purposes less obvious- "shared breathing" time (!) and observation and non -stimulation.

16. Importance of good quality sound and tactile equipment

17. Multisensory a dimension of the curriculum rather than the use of a space.

18. Recognise that technology has a value and status.

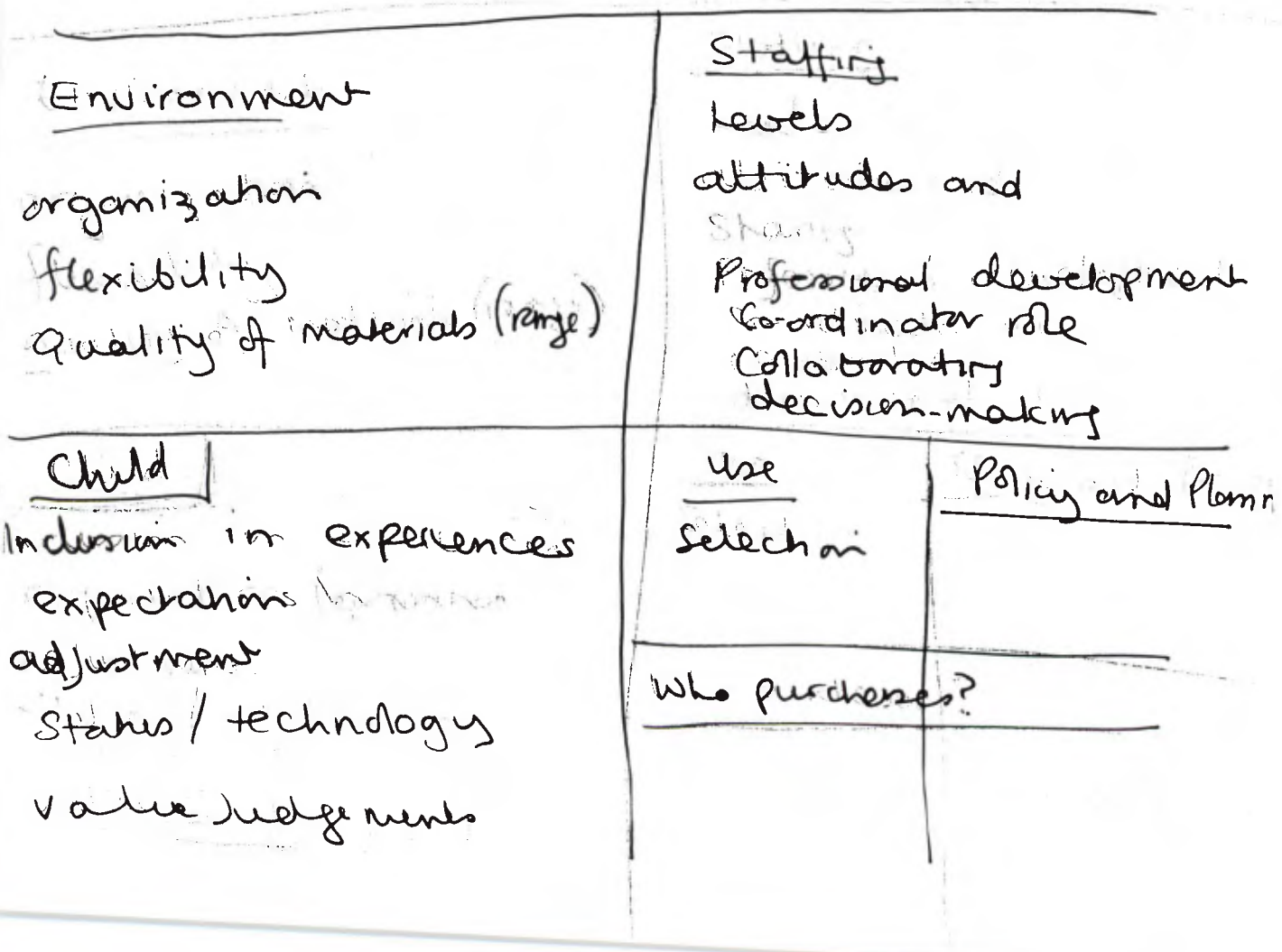
19 What can I do in a multisensory environment that I can't do elsewhere- may be kick-start the use of a sense.

20 Importance of thinking about the age appropriateness of the material.

21. Importance of working with others collaborating with professionals and parents. (Pagliano).

Way forward to develop a flowchart about the decisions to be made.

Policy (Tina) list of things to use it for.



Multisensory Environments- Flip Chart Notes and Individual Group Notes

The following list contains the key points arising from the focus group meeting on 26thy May 1999. An attempt to organise the list has been made and this has highlighted some of the tensions involved in developing the use of MSEs. Brevity of comment does not indicate importance of item !

1. Clarity of purpose- needs to be specific as in IEP (for example choice, therapeutic or as part of the curriculum for particular sessions).

2. It is important therefore that the use of the environment is carefully planned in relation to pupil needs. In this sense the use of MSE is carefully targeted.

3. Need to ensure that this approach- which may be themed takes account of continuity of understanding, to ensure that the experience is meaningful and that the individual is not be lost in the narrative.

4. Importance of experience being child led- inclusion of pupils in experiences (rather than totally theme led or being technology driven)

5. Planned and structured approach is important but not at the expense of incidental learning.

6. Attitudes and perceptions of others where purposes less obvious- what is the place of "shared breathing" time, observation and non -stimulation how do these impact on the child's learning opportunities

7. Time is important for:
-preparation- e.g. use of objects of reference to indicate going to the room, working with others, "signed" in the corridor, labelling of the room etc.
-doing- so child has time to adjust to what's happening
-sharing with others - another child or group, staff (between classes), parents/sibs, academics, inspectors, visitors.

8. Needs to take account of child's expectation of routine

9. Evaluation is key- and needs to be evidenced based against the purposes, (there is a danger of being highly subjective)

10. Guard against the danger of using a multisensory approach with clutter of confusing stimuli. It is important to know and assess the child's use of their senses and to be aware of the order and mode of impact. Dave Wood article: "One sense at a time" e.g. use of sound to gain visual attention. This again raises aspects of the child's ability to control attention.

11 It is important for teachers to ask the question "What can I do in a multisensory environment that I can't do elsewhere" - it may be to kick-start the use of a sense, (or act as a catalyst), so that the child can then progress and transfer this skills more widely.

12. Capitalise on the value of an interaction with a reliable outcome i.e. the virtues of technology and reflect on the role of the adults/others .

13. Multisensory an approach to teaching, rather than the use of a space or a curriculum area.

14. In residential settings in particular, there could be confusion about the room being used for very different purposes/different set of rules operating.

15. Physical environment- need to examine the flexibility to reduce and increase the size of this.

16. Importance of removing external distractions through reducing possibility of interruptions and destroying joint attention (e.g. notice to others/observation window etc)

17. Importance of good quality sound and tactile equipment

18. It is important to recognise that technology has a value and status in 21st century

19 Importance of thinking about the appropriateness of the material, including issues of age.

20. Need for planning, policy and development which is keyed into the development of the school

21. There should be a co-ordinator to share and inform staff, to take a lead on recording and planning. Question whether this should be a separate person (and therefore a separate "aspect") or link across the curriculum.
However it is important all staff are involved in the development of any policy.

22. Staffing levels may impact on the activities can carry out and may dictate whether or not the room is used. This has important whole-school implications for timetabling etc.

23. Professional development is key to ensure staff know about the role of the sense, positioning and different contexts for learning

24. Health and safety issues are important including the use of ultraviolet light, ventilation and hygiene. Toys that are used are often tested with 0-6mths baby. There are also child protection issues not least arising from the small space and proximity and the often secluded nature of settings.

25. Importance of working with others collaborating with professionals and parents and the time required for this.

One possible way forward is to develop a flowchart about the decisions to be made.

Multisensory Environments- Flip Chart Notes on Group Feedback

1. Physical environment- size and reducing and increasing

2. Need for planning, policy and development which is keyed into the development of the school

3. Clarity of purpose- specific as in IEP for example choice, therapeutic or as part of the curriculum for particular sessions. Need to ensure that this approach- which may be themed takes account of the continuity of understanding, individual must not be lost in the narrative.

4. Time is important for:

- preparation- e.g. use of objects of reference to indicate going to the room, working with others
- doing- so child has time to adjust to what's happening
- sharing with others child, group staff between classes, parents/sibs, academic, inspectors, visitors.

5. Planned and structured approach is important but not at the expense of incidental learning.

6. Importance of experience being child led- inclusion of pupils in experiences (rather than totally theme led or being technology driven)

7. Needs to take account of child's expectation of routine

8. Professional development is key to ensure staff know about the role of the sense, positioning and different contexts for learning

8. Evaluation- against the purposes and evidence based, (danger of being highly subjective)

9. Capitalise on the value of interaction with a reliable outcome and the role of the social context

10. Guard against the danger of using multisensory approach with clutter of confusing stimuli. Where it is important to know and assess child to be aware of the order and mode of impact. Dave Wood article: "One sense at a time"

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15. Attitudes and perceptions of others where purposes less obvious- "shared breathing" time (!) and observation and non -stimulation.

16. Importance of good quality sound and tactile equipment

17. Multisensory a dimension of the curriculum rather than the use of a space.

18. Recognise that technology has a value and status.

19 What can I do in a multisensory environment that I can't do elsewhere- may be kick-start the use of a sense.

20 Importance of thinking about the age appropriateness of the material.

21. Importance of working with others collaborating with professionals and parents. (Pagliano).

Way forward to develop a flowchart about the decisions to be made.

Policy (Tina) list of things to use it for.

Start List of Codes

Based on flip chart notes

Physical Environment	**PE**	**1.1**
PE: Organisation	PE – Org	1.2
PE: Flexibility	PE – Flex	1.3
PE: Materials/Equipment	PE – Mat	1. 4
PE: Use	PE - U	1.5
PE: Health and Safety	PE - HS	1.6
PE: Funding	PE - F	1.7
PE: Development	PE - D	1.8
Policy and Planning	**PP**	**2.1**
PP: School Level	PP – SL	2.2
PP: Individual Focus	PP - IF	2.3
PP: Group	PP - G	2.4
PP: Evaluation	PP - E	2.5
PP: Assessment	PP - A	2.6
Clarity of Purpose	**CP**	**3.1**
CP: Choicemaking	CP – CM	3.2
CP: Therapeutic	CP - T	3.3
CP: Continuity	CP - C	3.4
CP: Links	CP - L	3.5
CP: Curriculum	CP - CC	3.6
CP: Evaluation	CP – EV	3.7
Time	**T**	**4.1**
T: Preparation	T - P	4.2
T: Information Sharing	T - IS	4.3
T: Adaptation	T - A	4.4
T: Response	T – R	4.5
T: Allocation	T - AL	4.6
Planning and Structure	**PS**	**5.1**
PS: Incidental learning	PS – IL	5.2
Child	**CD**	**6.1**

CD: Inclusion	CD – IC	6.2
CD: Status	CD – ST	6.3
CD: Needs	CD – N	6.4
CD: Routine	CD – R	6.5
CD: Interaction	CD – I	6.6
CD: Outcome	CD – O	6.7
CD: Control	CD – C	6.8
CD: Progression	CD - P	6.9

Staffing	**ST**	**7.1**
ST: Levels	ST - L	7.2
ST: Attitudes	ST - A	7.3
ST: Professional Development	ST - CPD	7.4
ST: Roles	ST - R	7.5
ST: Decisionmaking	ST - DM	7.6
ST: Collaboration	ST - Col	7.7

Appendix 2

Examples of Interview Transcripts

teach them. You don't always think, right, I want them to learn these skills, and therefore I will mould this story, I tend to do it the other way around.

You call it an interactive room?

We were very keen to call it an interactive room; we had a room with similar equipment in our old building and it was a multi-sensory room and we were going to stimulate the students, and we stimulated them to the nth degree, the trouble is that the students weren't aware of what their actions were doing. There was very little connection between "If I press this switch This will happen and I like it, or if I press this switch, this will happen and I don't like it." And we weren't getting any feedback from the students, so we were very determined from the outset that this room would be educational. We wanted to teach... we wanted to teach the students about cause and effect, about object permanence. We wanted them to have control over their environment and we wanted them to be able to make choices. The equipment that we have put in there is a fun way of doing that. We called it an interactive room and we wanted that put on the door so people knew that. It was a two way process – the room does something and the student does something and they communicate about something – whether they do like it or they don't like it. So it's a two way process between the student and the room.

There's a nice little book that we've got from Rompa about switch systems – I can't remember who wrote it but there's a whole section there about the use of dummy switches. So the student works by process of elimination and finds out what works so if we find something that they like as a reward using switches. They have to work out – how do I get my reward?

Did the session go, as you would have wanted?

No – No it didn't, the students were tired Christopher wasn't particularly focused, Craig was distracted by the equipment. In a normal session I might give them some time to play with the equipment and to get that out of their system then focus them into what I want to do and then end off with a fun activity like playing in the ball pool which is what Craig requested. The idea was that they would match the card to the switch and realise that the red switch made the red light come on and then I turned them (the switches) over and they would have to work out which switch was which and label it. Christopher was quite distracted.

Advantages of an interactive room

What happens a lot with our students is they either plateau or get stuck on a certain skill for instance colour matching and it's up to us as teachers to find a creative way of teaching that skill and stopping them getting bored. Really it (MSE) is really another way of them experiencing colour as we might experience sound – it's quite good fun to sit in the dark. It has far more impact than it would sitting in a nice sunny classroom. So we're not teaching anything different, we're just using another resource to do it.

Is the use of the interactive room similar across classes?

Yes it is – I tend to have most of the ideas because I move around different classes in my role as Deputy Head and ICT co-ordinator. I take groups of children and work out what we can do and feed that back into the classroom. Obviously what you see on the video is best practice. Sometimes it doesn't work or it all falls apart or it doesn't teach what we want it to teach. From the mistakes comes other ideas of things that you can do.

I don't think anyone else in the school is less confident than I am in there (the MSE) we all went through the same in-service training. I regularly induct people into new things. All the teachers use the interactive room and you saw me working with Derek's groups today. One of the nursery nurses would normally carry out those activities. Once I have started off I hand over to the teacher. What often happens is they come back to me and say – we did that session and then we did this, that or this. So then I take it and cascade it to the rest of the staff.

Policy

The policy document was actually written before we got most of the room. It sparked off from our ideas on what our vision was about the room but the majority of the policy that refers back to the interactive room was written by Chris Mackenzie who is our teacher in the sensory base. She was using that room far more than I was with my group of students who were 16-19. So all that section was actually written by her, supported by her nursery nurse staff when we first got the room and the other bits have sort of fed in and built up out of our vision of how we wanted to use the room and we wanted to make that very clear to the other members of staff – it was not just something we did nice on a Friday afternoon – it could be something nice but it is an educational tool. So in that way we justified the expense of the equipment because it is not a cheap resource.

It (the policy) is reviewed bi-annually as part of our ongoing review of every policy document we have in school but because the interactive room and the equipment change quite often and also we hear about things in different parts of the country. We tend to think about that (the policy) more often – Maybe once a term.

Order of purchase of equipment

The reason the ball pool was the initial catalyst was that we never had one before and at the time we had a lot of little, physically active children and we wanted some sort of physical environment and also somewhere they could practice walking up steps and sliding down the slide. We went for the ball pool that we did because it is interactive and you could lie in it and press a switch and music would come on giving auditory experiences and tactile which is why we went for one with the clear balls and the lighting in. And the other thing we particularly wanted was the interactive bubble tube. Which we also

didn't have in our old building. So we put the two things at opposite corners and Chris and I sort of sat down in the middle with a bit of paper and talked about what else we would like

The Wall Display

The beauty of being in a small school– or the disadvantage of being in a small school is that every teacher has a lot of areas of curriculum responsibility. My other area is Maths which you saw in the? group and my other area is design and technology and we talked about the girl from the school with moderate learning difficulties who drew this (points to wall). Initially she had the factory (sound effects). What we did do was we read Charlie and the Chocolate Factory and watched the film so they had some idea but they wanted it to be the fantasy machine. The initial idea was that we were going to have something with cogs that moved round but I wasn't clever enough – perhaps we'll do that for next time. Course they could all contribute to the making, it looks quite neat but they all rolled the wallpaper round the tubes and they all ripped up the shiny bits of acetate paper and the shapes for the strawberries and sweets were cut out using a stencil machine so they only had to press the handle down, so it really is made by the students except the wooden wheels which were ready bought. We see.. and we are trying to create that the whole school is a multisensory environment. So if there's displays on the wall and you can't see very well, that display has to bring you pleasure as well as everyone who can see really well. That was the thinking behind it. So everyone could enjoy it,

Flexibility of Equipment

There was Spacecraft equipment in old room (MSE) but we didn't tend to move equipment around very much. When we talked about it in our in-service it was laziness rather than lack of confidence or vision as to how we wanted the room to look. The equipment is very easy to move. In fact a lot of the time you don't need to move the equipment you just need to plug it into a different socket. I can go in with a group of very able students and set it up very differently for an English session from a group of PMLD students going in for a vis stim session or an aromatherapy or a physio

Lessons from the earlier room

Funnily enough, the equipment that we have in this room is no different from that we had in our old room apart from the bubble tube and the ball pool. I think we have nothing different from what we had before.

For the future

This building is obviously temporary accommodation. We miss our hydrotherapy pool terribly. I would particularly like to create an interactive hydro therapy room environment which is something we have lots of ideas for,

also the thing about the interactive room as we have it now is that everything is portable, the soft play equipment and the ball pool bit. I would like something much more permanent. I would like to take the fibre optics further and have a wall of black fibre optic carpet with perhaps luminous hands on so that if the students touch them they are at face level rather than floor level. And the other thing is from this idea (the wall display) creating corridors or walls that are multisensory. What we are having to think about very carefully is that we don't want our children bombarded or over stimulated. A display like this (the one on wall) in the classroom perhaps is better than making the whole corridor interactive where the children might get over excited or stimulated in the corridor where we don't want them to get over stimulated or excited.

Aspects where the MSE is not as useful as first thought.

Yeah, the idea of the soft play. We put the steps on and the slide on thinking that they would climb up steps and slide down the slide and it has worked to a small extent but really taking them along to some of these pubs now that have soft play and gyms and rope ladders is better for physical development than the small bits and bobs we have in the interactive room. So we don't use it so much for physical development as we envisaged.

Use with pupils who have challenging behaviour

Yes we do, because it can be used to stimulate or calm. We've all be trained in reflexology and aromatherapy ; we all did an in-house course on that. We use the idea of aromatherapy or reflexology quite a lot in there (the MSE) and if someone is particularly distressed or self-injuring it's a nice place to go to put some soothing music on or perhaps do some aromatherapy; better than the classroom environment and also we have some children who self-injure by head banging and if they continue they are not going to hurt themselves because it's a soft environment.

It would have to be timetabled by need. We have a student who gets rather excited towards the end of the day and he absolutely adores being in the interactive room. We tend to use it as a carrot – a reward if his behaviour has been OK until about 2 o'clock then he can go into the interactive room and we leave him to follow his own devices. So he can go in there and he can shout and go about and do the things he would do anyway. Because even if the sensory base class are timetabled in for a last thing in the afternoon they often can't use it because of changing and positioning.

Shows Pupil Records.....

Each pupil in school has a record of achievement file. This file tells you all about this student. There's a pen picture the teacher writes, a copy of their Statement, reports, their current IEP. Full key stage assessments and their evidence of attainment and through the Becta scheme we got a digital camera in school and that has been a real help. We designed the record of achievement proforma and using the digital camera we can drop a picture onto

the proforma for the student to take home. As we got more proficient we were able to take pictures over time...and we could put all the best pictures onto one sheet....we were able to scan the design sheet (for design and technology) and again we took pictures over time of how the student made a chair using that particular construction method.

Records focusing on MSE

We use the switching a lot throughout the school. I don't know whether you can see (shows book) it shows Adele working the food processor via a powerlink switch and they (the pupils) can work the microwave, footspa – we use that (switch) a lot through the school and we have one based in the life skills area and every class has one. So all the switches and anything else you can plug in to is used for that.

Main achievements

Obviously she can occupy herself and that's a help to her family but she reacts very well through noises and her theatre experiments are very good; that's a piece of tactile equipment in the white area.

What do you think is the advantage of the multi-sensori experience for this girl?

I think it's that you're in control – it's an environment that you can use. I mean, so often if you're a wheel chair user for example, you can't get into a building because it has steps. Obviously the interactive building has no steps, and also, if you're a person that moves by rolling along the floor or shuffling then there's tables or chairs that you can bump into. Whereas Adele can move around the interactive room safely. And also she quite likes the sound of music but we can't always put the tape recorders on for her. We can set the interactive room up so that there's three or four different types of music playing and she can shuffle and move about and choose her own listening. And be independent of us, and not have to adapt herself to another environment.

Transcription of Interviews

[redacted] Hall

Kevin

What I have been doing really with K every week. At the moment we are working on the use of switches. Kevin is limited in how much he is able to move. Working at the moment on the use of switches so K may be able to use a communication aid and also for cause and effect and where it is best placed for him to be able to use it. He does seem able to ....and he has a little laugh

Why use a MSE?

Basically he is in a quiet environment (MSE). He is in a class with five others who are quite noisy and it is quite difficult for him to concentrate. Same when we have the mirror ball he can concentrate on that even though his head control....(is difficult) Sometimes he does track very well. It happens quite consistently. On many occasions you know (by the way he responds) when the red and the yellow (lights) come on he gets quite excited and there is a sharp intake of breath and a little laugh. He didn't do that today – he was out of sequence and perhaps felt quite rushed.

Sometimes nothing happened – the light didn't come on

The light goes off on its own after a while. I think that might be quite an incentive.

Positioning

Normally I would like someone like Kevin to be out of his wheel chair – especially when using a switch. Supported in a beanbag in a semi reclining position. Ideally it (the switch) should be at eye level. One of his favourite positions is lying on his front on a wedge. He'll lift his head but its just too low for him in that situation and also he is very much in one position and can't lift his hand, so that's why he stayed in his wheel chair. He likes the leaf chair and enjoys the movement of that. For short periods of time he is more comfortable in his chair really.

Who normally works with Kevin

It is his classroom staff usually but I have been for the last four or five weeks. Taking him for a half-hour session in there on a Tuesday. That was really a follow-on from his visual assessment and because there is so little he can do. He did seem to enjoy ....that it was quite a nice activity for him to do. I think he mainly enjoys being away from the class. We normally have something visual first, then listen to some music and watch the lights go round at the end.

Assessment

Kevin is particularly difficult because he has no formal way of communicating so it's very difficult for me to understand whether he can recognise ...erm. As you begin to know Kevin his facial expressions tell you quite a lot. Responds with quite an excited smile at certain people. People approach him without talking or making any noise – so we feel he can recognise people by their faces or perhaps their clothes. He also shows quite an excited response to things like his drink mug so we do feel that he has quite good vision for recognising. He has quite a steady gaze and will look at you.

So Kevin is particularly difficult because of his limited communication and movement. When we get a little further in selecting things for him to communicate – when he gets a reward for selecting a certain image rather than the auditory scanner which I think is going to be too difficult for him. So it will be interesting to see how he gets on with that (selecting images).

Puja

Puja has not got a great deal of patience and she can be quite destructive with equipment. She will move quite quickly to grab and destroy equipment. Even the activities she enjoys, she will usually only tolerate for a couple of minutes. She likes using the touch screen on the computer and she will be highly delighted for two or three minutes and then try to throw it on the floor. It was interesting to see how she was with the fibre optics – she was so gentle and explored them – even looking down the end. She did that for quite a long time – would be about 15 minutes. She enjoys music activities and enjoyed for a short time using the xylophone. I thought she would have enjoyed that for longer but when that spooky sound came on she didn't like that. Perhaps we should have done those things before using the fibre optics – she had her heart set on going back to those. She is very aware of rhythm she is quite clever really – she will copy rhythms.

MSE

The benefit for Puja of going in there was spending so long on one activity which I have never seen her do in any other situation. To move on to handling other equipment with such care would be very useful. She has quite useful vision. She can identify different people in photographs for instance. She has not made very much progress with her speech but she is selecting pictures and is using them as part of her communication. She does make quite a lot of noises but very little speech. Another thing she has been doing as part of her vision training is copying movements. I sit in front of her and move my arms and use different facial expressions and she can copy that and she does use a few signs. She is quite a bright girl but it doesn't seem easy for her to do that (use signs). She does seem better using pictures and I think that is a better way forward for her. She does get quite frustrated but I think that is because she finds it so hard to communicate (in reponse to Jill's question about Puja's aggression).

Turn Taking

She responds quite well. I have been doing that using a computer using picture build and playing with the little keyboard. I do half a tune and she finishes it off. She has quite a good idea of high notes and low notes – she quite enjoys that and I think it is a good idea for her to interact with someone like that. When I was playing the xylophone she would play along using the same kind of rhythm. She loves percussion and things like that when she has a music lesson.

Positioning

I didn't move Puja out of her chair because I'm not so confident in moving her without her own staff. She comes out of her chair and into a standing frame – she has quite a few different chairs. When she lunges forward to reach something she can topple over and hurt herself.

Flexibility of equipment

The infinity tunnel is quite low on the floor. It would be lovely if it was height adjustable. I don't know whether they make them height adjustable but if you could use them with a standing frame or wheel chair. They (the students) have very specially adapted wheelchairs, which are probably the most comfortable seating they have. When you get them out even on a beanbag they are probably not so comfortable. (question from Jill - is there anything you can move out of the MSE?) I don't think so – not in that one. The leafchair you could probably move but it's pretty heavy. Having said that – most things do need to be firmly anchored because most of the children get hold of things like the bubble tube and give them a good rocking.

Laura

Bubble tube – It's always at this (close) distance – she likes things close. I think also she does have quite a serious hearing impairment. She likes the vibration – she will quite often put her cheek against it or her hands. She probably gets as much from that as the vision. She will move about quite a bit if you are playing around with light emitting equipment in another situation.

Anne-Marie

When she paints she likes to paint her hands and face – she likes things happening to her. She is quite fascinated to see the projection of colour going across her hands. The first time she went in there (the MSE) she was trying to wipe, lick it off. It was like paint she was trying to wipe it off and put it on other parts of her body and tee shirt. It would have been quite interesting to have got her at that first stage – yes, she is very fascinated. She likes the computer, she will climb onto the table and lie close to it – she likes to have things very close up. She is not a child who socialises – she likes to be on her own most of the time. I think a few of the children have shown a bit more

social interaction in a situation like that (MSE Anne-Marie and Michael). She would start by seeing the projected image on Michael and be quite interested in it because of that. She was quite close to him. I think some of the children interact with staff better in a situation like that – which is a start.

Jody/Michael

Jody and the footspa. Michael was trying to press the sound wall you could see his knuckles going white but it was just too hard for him.

Equipment maintenance and development of MSE

We have had quite a bit of trouble with that room. We have never really had ...ever since we had it installed....last September I think. We have nearly always had something broken in it.

We had the first part (where we saw Laura about ten years ago). Yes, it was used but after the novelty wore off it was found that certain children benefited more, so not everyone went in there. There was a little more thought went into which children went into it. We used to say a maximum of three children. Some of the quieter, more able groups did use it for their communication sessions. People did use it for different purposes. Then we had the dark room with the ultraviolet light. Which has quite limited use. We tend to go in there with one child for a very specific reason..

Assessment

We have had several children over the years who have come in (to school) and no-one knows whether they have any sight at all but then you may notice some response to light, then under ultraviolet light you will find a response. That's the type of child that I find it most useful with. Sometimes children will begin to develop visual skills, which they haven't before because they haven't had that amount of contrast before. We are quite careful with the use of ultra violet light. We have a timer about 15mins - it's me that spends most time in there. It has on certain occasions proved useful. A couple of children have made enough progress so that no one would be in any doubt that they had some sight, even though notes say they are blind. One child – well in fact both but one child was in a wheel chair. He kept his hands under his tray and didn't want to interact. It was quite difficult. He did begin to be interested in things under the ultraviolet light and did begin to reach and did begin to reach out to bright things in the normal environment. At the same time he was beginning to walk and use a rolator. Then he had reason to use his light perception because he was beginning to move. So his whole development has been aided by him learning to use his vision in that kind of way. Certainly now you would be in no doubt. He will reach to pick up his drink from the table. He still needs very high contrast whereas he didn't use his sight to the capacity he does now. This would be part of a visual training programme. I use light emitting objects in a variety of places sometimes I will bring them in here (assessment room) and see their (the child's) reaction to different things such as food. We have one boy here who has very limited interest. He likes

food and a couple of special things he likes. Even just using that we were able to see if he could find non-food objects or a couple of crisps. So we were able to tell what he could see against different backgrounds. We held his favourite toy at 3 metres then something he wasn't interested in. He showed an excited response to the favourite toy. So we were able to determine he could see something at that distance. A child who wasn't verbal or interested in many things – we actually built up quite a picture of what he was capable of doing. We found he could find his favourite toy when it was half hidden on a crowded shelf. He had quite a high level of visual skills, it was just that he wasn't interested in anything.

Role

My title is low vision co-ordinator. I do quite a lot of assessment not all of it on my own. I like to have someone with me who knows the child quite well such as classroom assistants. For communication purposes as much as anything else and also because it is useful to have two people noticing. We use quite a bit of video material.. I do quite a lot of staff training and quite a lot of that is how to observe – how children respond in different circumstances and to different materials. Then we can keep adding to what we know. Someone will say – I saw Michael lick his finger and pick up a crumb and someone else will say – she (the child) recognised that was an ice-cream van even though it wasn't playing a tune. I have a checklist that people can tick to check responses to different things like different surfaces. From that we can get a good idea if they (the child) have a problem like depth perception, face or shape recognition.

Recording

What I have found most useful is more in a narrative form but it comes under different headings such as response to distance, objects. Whether they can recognise photographs simple colour photos. So the report comes under those kinds of headings the carers and classroom staff don't seem to find numbers or acuity particularly useful. They want to know what they can do about helping the child. So that's the way it's done really. When I've built up enough information a copy goes to residential and classroom staff. It's also very useful for when the children have a clinical assessment to add to that. Obviously I can't do what they can do in hospitals or what the ophthalmologists do – so it's a bit of each. What we need to know is how we can help the child by providing the right environment. We've had a bit of discussion over K about a headswitch. He seems to be able to move his head better than his hand but one of the issues is that he seems to turn away so he can't look.

Communication

We have a speech therapist who is also feeding co-ordinator and communication specialist and she uses the information quite a lot in deciding what kind of communication aid. She might like to know whether they can use pictures or whether they are at the stage of more symbolic communication.

So then it is much easier to know. She will come in when I am having a look at a child, as I will go into other areas. I like to know how they respond in PE for instance or walking. I think she does go in to the MSE.

Timetabling

We have timetables. We usually leave some times blank. Shropshire social services have A SLOT when they use it and have brought mothers and babies in. Visual stimulation more than anything

Space

I put round a little checklist to see who used it and how. One of the groups had used it for drama and you can get more children in and you can get effects like the thunder and lightning. But on the other hand that little division that comes across is sometimes nice if you have a child who likes to feel the size of space it's in. The little foyer we're hoping to put different low-tech things in that can be changed around. The art teacher made the things in there. One suggestion was tactile tunnel, which you could go inside – that would probably be quite nice. There are children with a profound hearing and visual loss that don't get a lot out of the stuff we've got at the moment. There isn't much except a bit of air blowing or vibration from the bubble tubes. But we haven't got much which isn't visual. It would be really nice to have things which vibrated at different frequencies. We have student in the continuing education dept who has no sight or hearing and very little taste but he does love to explore different things and to have an environment in which you could have different things perhaps on a theme. He is really needing to feel free to explore but is needing to learn that there are places where you can explore and places like cafes where you have to sit still.

Headteacher: [redacted] School

Establishment of MSE

We had meetings with the Director of Education about what would be needed in the area and we had a clear indication that an MSE would be an asset not only to our school. After full discussions with peripatetic and support services it was decided that we should establish the studio in our school. It was established in our school because we had one of the largest support for learning bases in the area. I believe our staff are well motivated, innovative and are prepared to pick up new ideas and run with them and meet challenges if they think they are helpful to the children in the school. So I think it is a compliment to the staff in the school. We liase with outside agencies and parents to ensure that the whole exercise is successful in support for pre-school children in nurseries but others with sensory deficiencies and special needs. From early days to secondary school – we encourage those people to come here. Just the other day a secondary school who felt it would be an advantage with a youngster – an adolescent with her mother to come in and work with our staff. I think the whole of the community now knows it is here. Some (know what an MSE is) and some don't. That can still be a problem because those that think they know what it is want to come because they think of it as an exciting place to be but they perceive of it as a social exercise and we are committed to the studio being used to enhance teaching and learning, it is not simply there as a recreational service and that might have been a problem. Any individual or group which uses the facility needs to identify the educational aims and outcomes before and after using the studio. Sue has the job of putting together the timetable and it's her who has to juggle the competing demands. We are committed to the studio being a community resource and we'll play our full role. All persons are included all we ask is they have a very clear idea of the purpose they want to use it for. There is a form to complete and they indicate which equipment they want to use and what they want to do. Because again it is important that the equipment in the studio is used for specific purposes. It is unusual – in fact I don't think it would ever happen that all things are working all the time. It becomes an Aladdin's cave for some people and they just want to see lights flashing and music playing, cymbals crashing – which is great fun and we believe in education being fun but it also has to have a purpose.

I think that technology does set a status but I have to say that prior to the establishment of the technology we did have a soft play and ball pool and activities for young people out with the normal, if you like, in the classroom environment so we have tried to develop exercise and therapeutic exercise for young people prior to technology coming in and of course the high tech dimension.

The Future

I know what will happen two or three years down the line and that is we will continue to develop the resource. We need to innovate and will continue to look at different ways of meeting youngsters needs; I have no way of knowing where technology is going to be in ten years time. If we continue as we have started and that is to say that we establish a studio and facilities to meet need we will keep pace with the technological developments.

Who decided to call it the Studio?

We did, yeah we did – we went through several names if you like multisensory room – we went through a whole variety of names. The main thing is that it is a flexible resource. It is there to meet need in terms of special need but it can be used as a drama studio, a music studio, it's there for all the community to use. So studio as well as being a more attractive name also reflects the more multi-purpose use the school gets from it. The way the school runs indeed is not top down. We have a structure in the school in which we co-operate to develop all policies. It wasn't a conscious decision to call it a studio it developed and indeed once we realised just how flexible the resource was it was a more appropriate name for it.

I think that's a very important point. The learning support base and the nursery are both integral parts of the school. That of course has two sides to it because what facilities they have are also used by the whole school. And when we established the studio we had inductions for all members of staff to familiarise themselves with the equipment that was down there and to have some degree of training on its usage. That in turn allows them to use the facility as and when required. In particular drama and music.

[redacted] Primary School

Interview with Deputy Headteacher

We have had Angus playscheme wanting to use it and Guide groups and we have had to go into difficulties, such as what would the caretaker do to supervise it and so the Directorate said that it had to do with education and had to be within the school day. So far the groups who are using it are an outside nursery group – a special needs nursery. All of our school have been told about it and I think they have to go about thinking how they might use it but we've had a really busy year. We've had an inspection y'know it takes... So it's a nursery from Arbroath and a nursery from Brekon with special children. They tend to come with parents (if they have more profound needs) sometimes Mum and Dad both come and she (the sensory co-ordinator) has a number of them at once. It's useful for the little ones, the toddlers – she has had some good reactions.

Recording

Murdie asked her (the sensory co-ordinator) to write out .....So it's used by all these external groups. They contact me and I deal with the bookings. I've got a timetable and when they come here they log in. I've got a thing (form) for them, they just log in. We can tell who has been here and for how long. The other thing we are hoping – we'll keep a file with this (the login book). We are hoping to get this going next session. Again. It's just so we can see just how many children – what type of children and how often they come –so we are hoping to get that up and running. I mean it may be added to or altered slightly, that's a sort of starting point.

We obviously use it (MSE) because it's right beside us, (much) as we use the sand or waterplay. You'll say – you've been working really hard, you can now have ten minutes, choose a friend and they (the two pupils) can have ten/fifteen minutes there. We send a member of staff. We must have it more planned next year. We have a Thursday activity group when we split up into four groups and one member of staff has responsibility for a group of children. That group of children rotate and will have one member of staff one week when they will do cooking or baking, then sewing and then we go out and about, we call it 'social', we go to a café. Next year we are going to plan five groups and one of those groups will have an afternoon in the studio, which'll be planned for that group of four children.

Needs

We've got to see how the children fit in – we've got a lot of...there are six children coming up from nursery and they have quite diverse needs. It might be better to have a mixed ability group. So far things have been better. It's almost like a family grouping you are not putting the onus on the older child to parent the younger one but it usually works much better you can...there's a

much better learning situation for the younger child or the child without language...with not just an adult model but an older model. So possibly we'll have it as a mixed ability, mixed age grouping then we are going to suck it and see as they say. So we are actually going to have it (the use of MSE) programmed rather than being just casual.

Examples of use

We had a really successful time, it was arranged by our art specialist. We were doing 'how people used to live' y'know the things that are always the same – food, shelter etc.. So we were looking at early experiences of cave people. It was hugely successful in the studio, the darkroom was set up with sticks for the fire – we rubbed the florescent sticks together really hard. Someone – a member of staff, just flicked on and off (the ultraviolet light) so it just sparked. Then once they got going and the fire was on all the time, we told stories about those days, what animals did you meet. Then with the echo panel we made noises like wind through the caves or storms or animal noises and all of these things were superbly successful. The fibre optics hanging down we made that into a pond with sparkly fish and fished those out with sticks. We have children with low muscle tone. The motivation to fish these fish out was amazing. We use the sound and light floor for helping children with colours, find two reds or light up a red and a green.

Maths

We've got the different shapes (under the UVA) to reinforce what we are doing here (in the classroom) with some of the younger kids.

Other

We had a fairground with a fortuneteller with wheel with the signs of the zodiac, which rotated; the art teacher did it. Our fortuneteller was telling rather ridiculous fortunes. We use the infinity hut for telling stories, particularly with children with a poor attention span. We have one poor wee boy – he's off today but his attention was (all over the place). He couldn't home in on a story. He went into there (the infinity hut) with two other children and he (concentrated) answering questions and now his attention is much better and he has much better listening skills. It was a bit of a breakthrough – maybe he would have got better anyway but...

Use by other members of the school

The most spectacular one was Yr. 7 last autumn. They always do a topic on the war. At the end of the topic when they have explored what it was like to be an evacuee they has to imagine that (the studio) was an air raid shelter and they had all the lighting just right and I'd been producing a play that was set in the second world war so we had a tape that we'd mixed with all the sounds such as the bombers coming in and then we flashed the lights to make it look like a searchlight and then the bombs falling. The sound of the bombers disappearing and the crackle of fire and the mood was fantastic...chilly. After that we kept the lights low and we sang war songs and it was very, very

moving...possibly the most superb thing that's been done in there. But Primary 7 will be doing that again in the autumn we re-enact it for other years.

It (the studio) is often used as an experience in itself. It tends to happen more in a casual way (staff ask) "Oh could we have the studio this afternoon" and it's done as a sort of reward/respite and it's enjoyed for itself, the way that Christopher's enjoying the sand just now. We are not going through a programme; it's just used because it's there. We use it every day on a casual basis; again the ball pool is a great favourite with children.

Physio

That's Natasha and a wee boy you haven't seen today. They go in there once a week. So she (the physio) showed the TCAs what the exercises were and they do them (with the children) four times a week. Martin is a cerebral palsy boy who walks with a rolator. He did have a problem so he got physio as well. They are much more keen to do it and they put on music. He was absolutely cheesed off with doing physio. He did have lots of problems anyway – very vocal about not wanting to go to physio and the physiotherapist had to cajole him to do his exercises and when he went in there (the studio) he apparently did press-ups which no-one had ever seen him do before. He got to bring in his own CDs, he brought in music from home, it was very important that he kept bringing different stuff. Because it's (exercises) very boring and he'd had to do them all his life and it was important that he kept doing them.

History of Studio

The pre-school visiting teacher said that he had seen some wonderful MSE and how about having one here. So interest was sparked. We used to part of Tayside which was Perth, Dundee and Angus and this was just after we had all split up again into discrete districts. We all had new directors of education etc.etc.If a parent said I want this or that for my child we wanted to be able to say OK you don't have to go out of Angus to get it and this was one of the things ..We could get some multisensory equipment. So they began to look at where they could set it up and we had a suitable area. Richard Hirstwood came up and gave us a training day. Representatives form every service were there to see and hear and I was thinking it would be great if it was in the room the whole room. And he said this would be a wonderful studio and I thought that was a great name. It was serendipity really. Maybe there's other reasons but I'm not privy to them and then the Scottish Office came up with a bundle of money and instead of just a little thing we could make full use of the room. We were going to get phase 1 and then phase 2 the following year but the first bit had to be done before the end of March and weeks later it was OK go on with phase 2, so by last summer just by holiday time it was completed with all the details completed. So we have actually had a full year of it (the studio) like that. It just takes time to change your way of thinking and develop what you are going to offer. But certainly we've got clearer ideas but it has been well used by us – it could be better used by us and the rest of the school..very useful.

Training

Training day – no it wasn't for everybody. It wasn't a training day. It was really Richard coming to sell the idea I suppose. And then after it was set up there (in the studio) we had a training day. Mike was here. I think he still had a couple of guys and they were still putting up various things and we had one day where there were representatives from different services like the hearing and visually impaired. They use it but not very much. Hearing impaired haven't used it. I think it has been used maybe twice and the visually impaired maybe four times but I think they are hoping to have it programmed for maybe next session. So these people were here (for the training day) and they brought some children with them a pre-school child, two visually impaired, primary aged children and there was all of our children. How we worked it was two of our staff went in for a while and then some of the other staff went in so we could all learn about the switching while Richard and Mike went around working with the children whirling things around and putting fibre optics into the ball pool. Telling us to get the fluorescent paint going. How other staff get involved – she (the teacher who did the World War 2session) came to see me and I helped her set it up. She alone stayed back one night and we went through it all. On inservice days we've had a rolling programme and staff can have a look see. On another day we say we will be available for staff to come in and use the stuff and ask us questions and now we hope to do that again next year. Other training – anyone involved for support for learning could come along. We had about forty-five people from all over. We had some nursery people and some primary school people, family and child centre – social work people came to look at it. They came back yesterday to see. So this is the history of how we came to get this and here's what we've got but I've suggested to the Assistant Director and our support for learning that we ought to set up three days over the next session where people can come and hands –on come and learn about the switching and how to use it – for people who want to use the facility. But there's always so much to do in education. You're always chasing to get everything done. But I'm certainly going t keep mentioning this. Y'know people should be using it more but I think that some people are reluctant because they think they don't know how to use it.

What has been most successful?

The ball pool is the universal success. After that I think the light and sound floor, the UV facility as well. I like the infinity hut because if you are going to sit in there and tell a story it is rather nice. The children like to go into the UV room and fiddle with the objects. They tend to go for those rather than the ones that hang down. I would say the sound light floor probably. The mood setters – I like that facility, they are excellent. You can have it really bright of low or no light with a projection of what you want or white curtains and I like that.

Children

When they (children with hearing impairments) first went in and were running around and touching everything. They went up and hugged the bubble tube and said that they could feel it – both said that. Nobody had said can you feel it...Debbie (who is autistic) likes to sit in the middle of the bubble tube area and look at herself in the mirror.

Appendix 3

Extracts from Coded Interview Material

Script (1)

Interview Transcript : Cheryl [redacted]

11:36

Q context in which she works ?

..department is behaviour and communication difficulties, autism. Their needs are quite complex, its quite wide as well, we go from very low range to high ability and autism. They're all sort of working within the curriculum to, how can I put it, they've all got different levels and the work is adapted to their own needs, so its not "we're all going to sit down and do this today" , its "this is your work basket, and this is yours," so everything is individual. We do have group work, but there again, the vocabulary and the questioning is asked to individuals.

Q -?
....that you interact, they might want you to press it, it really does depend on the student who is using it at the time. We leave it up to them because this, it is there time and we 11:84 like to leave it to them to decide. We don't want them to be forced into anything, because they are experiencing a lot of different things in here, smells, sounds, looking at different glittery things, and it is entirely up to them.

Q- is it time-tabled ?

It is time-tabled, yes, they get half an hour slot, throughout the whole department, although its used, but some students may need to use it more than others. If they're upset, we don't like them to use it, because we prefer them to realise that this is a sensory room and not a calming room, because we've got another area for that. If they need to take themselves off to calm themselves down, then that's what they use. This is just a sensory room, for them to come and experience. We wanted to make sure they knew the difference. If they can't cope with, they need to just go off and calm themselves, basically, that's what it is, its not a time out, it's just a calm room where they can sit down and get the frustrations out of themselves. It may take 5 minutes, it could take an hour, and however long it takes. And this, they come in here, and they can feel this, they can look at themselves, they can, we can say what's this ? if they wish, its up to them, although they can lay there and this is where they experience, we've got loads of smellies, we spray things, they can smell things. The difference is there, this is where I go to calm down: this is where I come to experience, to feeling, all the senses, listening.

- CUT

2:34 this was a long time ago actually, because we're experiencing a few problems within our room, so we're not able to use it as often as we'd like to, but we've got 1 particular student in our department, he loves everything, he comes in, and straight away, everything's down, everything's out and he's got all the talcum powder , and he'll spray it and put it all over him. He'll smell everything, he even licks the soap, because of the taste and then he'll smell it. I know its not nice but that's what he likes doing and the balls, he comes in and when he's finished, that'll be all left there, and then he'll get the balls, and you'll take it in turn to play with the spiral. He likes to see them go round and round and round and then he'll wait and play with the bubbles. And that's what he'll do for the whole half hour, he just touches, but these he just plays with these, these light up actually, when they're on and he just plays with these, like this, because he can feel them, see them, he loves to see things dropping. And that's basically what he does, he feels.

and how's that different from how he might be in the classroom ?

He does try to do that in the classroom, but because its a more structured programme within the classroom, he, when he comes in, he's allowed to do it for 5 minutes and then he's told to put it away, so that he's not being denied what he wants, its just, "you've done that now its time to do this.. this is what we do in the classroom." He understands that, he has his little time, that 5 minutes, but he comes in here to do it for whenever..

6·5 CD-R

problems, what stops you ?

but...things get thrown, things do get broken. We have had an incident when the kidibubbles' been kicked, and we've asked staff to take them out immediately, because they can damage the equipment, because they're upset they can't control it. They just pick up things, and things go flying. It's very dangerous for whoever's in there with them, and for, the student themselves. They need to be not put in any danger and they would
13:10 if they hurt themselves in here, or they hurt someone else.

1·6 PE-HS

availability of staffing effect use of room

yes obviously, if staffing isn't, or if people are away or its not possible for permanent staff to come down, then the room wouldn't be used, because obviously we have guidelines, supply staff and that, they're, you wouldn't leave them on their own with certain children. There are some children you could, but its advisable not to, its best to come down with a permanent member of staff and its best to come down in a 1:1 as well, normally one adult, one child.

7.2 ST-

any groups in here ?

we did start off having groups in here. We said that 2 children and 1 staff that would be fine, because we have access to phones, or whatever should there be a problem. But we did find that was becoming a problem because a lot of the students felt like it was intruding on their time, their own individual time, if there was someone else in the room with them. They didn't seem to get as involved 13:47 because as you know they are in their own world CUT.. to change it to adult:pupil that was it, we did try it but it didn't work out as well.

2·4 PE

setting up the room- how decided what to put in ?

myself and two other members of staff, we were asked if we would like to do it. We said yes, so basically we got a load of magazines and brochures from certain companies that make goods for special needs. We went through them, and just chose. Well, we obviously had a budget, because a certain building society did a charity fund raising day and gave x amount of money. This actually had a link in here. It was a coffee room I believe for the toy library wasn't it ? yes, there was a sink over there, so we had all the walls plastered, and then we, this was donated as well by somebody else, they gave us the money for this. and that was basically it, we just went through the catalogues and we sort of went through the students that we had, and tried to get as much equipment that would be useful to all of them, on the amount of money that was given.

1·8 PE-I

1·7 PE-F

1·8 PE-I

just by your department or shared ?

, it is generally BCD but we have had requests from other departments. If they've a particular child who needs, that's just difficult, I think there's other 2 students, 1 from 1 department and 1 from another that use it.

1·5 PE-I

cause of their behaviour ?

13:19 and also because of their needs, yes they can't always stay in the classroom because of their.. It's not always their needs, it could just be them

in general, you know, that they need something to keep them occupied, and active, and you know, if this works.. not necessarily their behaviour but just because they can't sit still or they need somewhere to come and relax or perhaps help their concentration or certain things. (6.4) CD-N

system for checking the room ?

14:34 Yes, we do, 9 times out of 10 people will come to see me and say this is not working, the battery is gone. I just come down here and look at it, recharge the batteries, and I come down here once a week, clean it up, make sure its all OK. That's basically it really, because that's all part of a scale that I was upgraded to do and this is what I do- part of my job, yes. (1.6) PE-I (7.5) ST-R

Q (Liz) how the children interact with the equipment, that when the children come there's certain things that certain children like ?

Yes, oh yes there, this is the favourite, this midibubble, they really like this cos when it goes on, it changes colour. Yes, its got to be switched on from up there, and its this that they like, the interaction switch, they just lie on this press it, they really like it, if you lay on like this its like a cuddle bubble thing, and you lay on it and you can feel the vibration as well, so that's why they like this because its got the vibration, the sounds and the bubbles and all the colours come up from it. (1.4) PE-I

system for recording what happens in here.

No, no, a lot of its just verbal, obviously we did have, I don't wish to sound negative, we did have an incident with a particular student, he really couldn't stay in her anymore, so it was decided that, no, until he calmed down, he shouldn't use it. So I just tell the teacher, he really enjoyed it, or not so good today, or. .quite honestly you can tell within the first 10 minutes whether they're going to enjoy it or not, so you could say, OK well another 5 minutes and we'll go, if they're not enjoying it. Its not a place, you do want them to come in here and not enjoy it. You want them to come in here and feel relaxed and at ease and to be able to do what they want to do. You lon'********** (3.7) CP-EV

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**********'d become a little bit boisterous, he was really ull of it and there's another one that just come in and sit down. I've been here and that's just fine, you know. It really does depend on who's used it.

ecause they are so individual, I mean, you can't group them, you know, each tudent is, their own needs.. is...they come in here to enjoy it, you know, they ove it, they love feeling things, they love the music. We've always gor calming usic as well, its like a relaxation session, as such as well, if they.. this is uite new, this has got a lot of textures, they can feel the rough, the smooth nd everything else, and they love anything, they love anything like that, its littery, its just the experience, they can explore, its like exploring a new nvironment really, you know, if you go out and you say "look at the trees" in ere its like, smell this, look at this, this is really nice, you know try nis.. (3.3) CP-T

Liz who decides which students are going to come in ?

When we make up the timetable, we always speak to the teachers and there is, so there's a child, there's a session in the classroom that they don't particularly enjoy. So we try to let them come in here at that time, because its only going to be disruptive for the other students, so everyone's going to gain from that, because the student that doesn't like that particular activity can come down here, and the other students in the classroom can get on with their curriculum activity. So, its those that need it most.

Liz- how do you decide who needs it the most ?

um, as I said, those that perhaps are not going to sit down in a particular session. Like at 10.30 to 11 there's an art session, and that child may find it very difficult to feel, like the messy art, the spaghetti, they don't like the feel of it, and that could become disruptive in the classroom, which would disrupt the other students, which is not good obviously. So if you bring them down here, they could be feeling things, which would help them progress to the next stage when actually they would be able to touch the messy art. But its a long process. 16:34 So we've got lots of things here, we've got talcum powder, we've got cream, and probably rub it on them, just that sort of thing, you know, if it helps towards something that's going on in the classroom, which it could do, specially with messy art.

so the aim is that ultimately they would be able to join in those activities.

Oh, yes, definitely and this would help, you know if you have a child that doesn't like tactile activities, then you can try to encourage them, cos there's other things here that they like, you can say we'll just try a bit of that, that's nice, smell that, and you can go from there, and then hopefully you'd end up massaging the whole of their hand and then when you come to messy art, oh just feel that and its not so nasty for them, as they see it, because they don't like their hands getting dirty.

(3.5) CP-L

Script (2)

Transcription of Interviews

[redacted]Hall

Kevin

What I have been doing really with K every week. At the moment we are working on the use of switches. Kevin is limited in how much he is able to move. Working at the moment on the use of switches so K may be able to use a communication aid and also for cause and effect and where it is best placed for him to be able to use it. He does seem able to ....and he has a little laugh (6.1) CD-C

Why use a MSE?

Basically he is in a quiet environment (MSE). He is in a class with five others who are quite noisy and it is quite difficult for him to concentrate, Same when we have the mirror ball he can concentrate on that even though his head control....(is difficult) Sometimes he does track very well. It happens quite consistently. On many occasions you know (by the way he responds) when the red and the yellow (lights) come on he gets quite excited and there is a sharp intake of breath and a little laugh. He didn't do that today – he was out of sequence and perhaps felt quite rushed. (1.6) PE-U

Sometimes nothing happened – the light didn't come on

The light goes off on its own after a while. I think that might be quite an incentive.

Positioning

Normally I would like someone like Kevin to be out of his wheel chair – especially when using a switch. Supported in a beanbag in a semi reclining position. Ideally it (the switch) should be at eye level. One of his favourite positions is lying on his front on a wedge. He'll lift his head but its just too low for him in that situation and also he is very much in one position and can't lift his hand, so that's why he stayed in his wheel chair. He likes the leaf chair and enjoys the movement of that. For short periods of time he is more comfortable in his chair really. (6.4) CD-N

Who normally works with Kevin

It is his classroom staff usually but I have been for the last four or five weeks. Taking him for a half-hour session in there on a Tuesday. That was really a follow-on from his visual assessment and because there is so little he can do. He did seem to enjoy ....that it was quite a nice activity for him to do. I think he mainly enjoys being away from the class. **We normally have something visual first, then listen to some music and watch the lights go round at the end.** (4.6) T-AL (3.4) CP-C

Assessment

Kevin is particularly difficult because he has no formal way of communicating so it's very difficult for me to understand whether he can recognise ...erm. As you begin to know Kevin his facial expressions tell you quite a lot. Responds with quite an excited smile at certain people. People approach him without talking or making any noise – so we feel he can recognise people by their faces or perhaps their clothes. He also shows quite an excited response to things like his drink mug so we do feel that he has quite good vision for recognising. He has quite a steady gaze and will look at you.

2·6 PP - A

2·6 PP - A

So Kevin is particularly difficult because of his limited communication and movement. When we get a little further in selecting things for him to communicate – when he gets a reward for selecting a certain image rather than the auditory scanner which I think is going to be too difficult for him. So it will be interesting to see how he gets on with that (selecting images).

Puja

Puja has not got a great deal of patience and she can be quite destructive with equipment. She will move quite quickly to grab and destroy equipment. Even the activities she enjoys, she will usually only tolerate for a couple of minutes. She likes using the touch screen on the computer and she will be highly delighted for two or three minutes and then try to throw it on the floor. It was interesting to see how she was with the fibre optics – she was so gentle and explored them – even looking down the end. She did that for quite a long time – would be about 15 minutes. She enjoys music activities and enjoyed for a short time using the xylophone. I thought she would have enjoyed that for longer but when that spooky sound came on she didn't like that. Perhaps we should have done those things before using the fibre optics – she had her heart set on going back to those. She is very aware of rhythm she is quite clever really – she will copy rhythms.

MSE

The benefit for Puja of going in there was spending so long on one activity which I have never seen her do in any other situation. To move on to handling other equipment with such care would be very useful. She has quite useful vision. She can identify different people in photographs for instance. She has not made very much progress with her speech but she is selecting pictures and is using them as part of her communication. She does make quite a lot of noises but very little speech. Another thing she has been doing as part of her vision training is copying movements. I sit in front of her and move my arms and use different facial expressions and she can copy that and she does use a few signs. She is quite a bright girl but it doesn't seem easy for her to do that (use signs). She does seem better using pictures and I think that is a better way forward for her. She does get quite frustrated but I think that is because she finds it so hard to communicate (in reponse to Jill's question about Puja's aggression).

4·5 T-R

6·9 CD-P

Turn Taking

She responds quite well. I have been doing that using a computer using picture build and playing with the little keyboard. I do half a tune and she finishes it off. She has quite a good idea of high notes and low notes – she quite enjoys that and I think it is a good idea for her to interact with someone like that. When I was playing the xylophone she would play along using the same kind of rhythm. She loves percussion and things like that when she has a music lesson.

6.6 CD-1

Positioning

I didn't move Puja out of her chair because I'm not so confident in moving her without her own staff. She comes out of her chair and into a standing frame – she has quite a few different chairs. When she lunges forward to reach something she can topple over and hurt herself.

Flexibility of equipment

The infinity tunnel is quite low on the floor. It would be lovely if it was height adjustable. I don't know whether they make them height adjustable but if you could use them with a standing frame or wheel chair. They (the students) have very specially adapted wheelchairs, which are probably the most comfortable seating they have. When you get them out even on a beanbag they are probably not so comfortable. (question from Jill - is there anything you can move out of the MSE?) I don't think so – not in that one. The leafchair you could probably move but it's pretty heavy. Having said that – most things do need to be firmly anchored because most of the children get hold of things like the bubble tube and give them a good rocking.

1.3 PE-FLE

1.3 PE-FLEX

Laura

Bubble tube – It's always at this (close) distance – she likes things close. I think also she does have quite a serious hearing impairment. She likes the vibration – she will quite often put her cheek against it or her hands. She probably gets as much from that as the vision. She will move about quite a bit if you are playing around with light emitting equipment in another situation.

1.4 PE-MAT

Anne-Marie

When she paints she likes to paint her hands and face – she likes things happening to her. She is quite fascinated to see the projection of colour going across her hands. The first time she went in there (the MSE) she was trying to wipe, lick it off. It was like paint she was trying to wipe it off and put it on other parts of her body and tee shirt. It would have been quite interesting to have got her at that first stage – yes, she is very fascinated. She likes the computer, she will climb onto the table and lie close to it – she likes to have things very close up. She is not a child who socialises – she likes to be on her own most of the time. I think a few of the children have shown a bit more

1.4 PE-MAT

social interaction in a situation like that (MSE Anne-Marie and Michael). She would start by seeing the projected image on Michael and be quite interested in it because of that. She was quite close to him. I think some of the children interact with staff better in a situation like that – which is a start.

6.6 CD - I

Jody/Michael

Jody and the footspa. Michael was trying to press the sound wall you could see his knuckles going white but it was just too hard for him.

Equipment maintenance and development of MSE

We have had quite a bit of trouble with that room. We have never really had ...ever since we had it installed....last September I think. We have nearly always had something broken in it.

1.5 PE – HS

We had the first part (where we saw Laura about ten years ago). Yes, it was used but after the novelty wore off it was found that certain children benefited more, so not everyone went in there. There was a little more thought went into which children went into it. We used to say a maximum of three children. Some of the quieter, more able groups did use it for their communication sessions. People did use it for different purposes. Then we had the dark room with the ultraviolet light. Which has quite limited use. We tend to go in there with one child for a very specific reason..

1.8 PE – D

1.5 PE - U

1.8 PE – D

Assessment

We have had several children over the years who have come in (to school) and no-one knows whether they have any sight at all but then you may notice some response to light, then under ultraviolet light you will find a response. That's the type of child that I find it most useful with. Sometimes children will begin to develop visual skills, which they haven't before because they haven't had that amount of contrast before. We are quite careful with the use of ultra violet light. We have a timer about 15mins - it's me that spends most time in there. It has on certain occasions proved useful. A couple of children have made enough progress so that no one would be in any doubt that they had some sight, even though notes say they are blind. One child – well in fact both but one child was in a wheel chair. He kept his hands under his tray and didn't want to interact. It was quite difficult. He did begin to be interested in things under the ultraviolet light and did begin to reach and did begin to reach out to bright things in the normal environment. At the same time he was beginning to walk and use a rolator. Then he had reason to use his light perception because he was beginning to move. So his whole development has been aided by him learning to use his vision in that kind of way. Certainly now you would be in no doubt. He will reach to pick up his drink from the table. He still needs very high contrast whereas he didn't use his sight to the capacity he does now. This would be part of a visual training programme. I use light emitting objects in a variety of places sometimes I will bring them in here (assessment room) and see their (the child's) reaction to different things such as food. We have one boy here who has very limited interest. He likes

2.6 PP - A

1.6 PE-HS

6.9 CD - P

6.9 CD - P

3.3 CP – L

1.4 PE - MAT

food and a couple of special things he likes. Even just using that we were able to see if he could find non-food objects or a couple of crisps. So we were able to tell what he could see against different backgrounds. We held his favourite toy at 3 metres then something he wasn't interested in. He showed an excited response to the favourite toy. So we were able to determine he could see something at that distance. A child who wasn't verbal or interested in many things – we actually built up quite a picture of what he was capable of doing. We found he could find his favourite toy when it was half hidden on a crowded shelf. He had quite a high level of visual skills, it was just that he wasn't interested in anything.

Role

My title is low vision co-ordinator. I do quite a lot of assessment not all of it on my own. I like to have someone with me who knows the child quite well such as classroom assistants. For communication purposes as much as anything else and also because it is useful to have two people noticing. We use quite a bit of video material.. I do quite a lot of staff training and quite a lot of that is how to observe – how children respond in different circumstances and to different materials. Then we can keep adding to what we know. Someone will say – I saw Michael lick his finger and pick up a crumb and someone else will say – she (the child) recognised that was an ice-cream van even though it wasn't playing a tune. I have a checklist that people can tick to check responses to different things like different surfaces. From that we can get a good idea if they (the child) have a problem like depth perception, face or shape recognition.

7.5 ST-R
7.2 ST-L
7.4 ST-CPD
2.6 PP-A

Recording

What I have found most useful is more in a narrative form but it comes under different headings such as response to distance, objects. Whether they can recognise photographs simple colour photos. So the report comes under those kinds of headings the carers and classroom staff don't seem to find numbers or acuity particularly useful. They want to know what they can do about helping the child. So that's the way it's done really. When I've built up enough information a copy goes to residential and classroom staff. It's also very useful for when the children have a clinical assessment to add to that. Obviously I can't do what they can do in hospitals or what the ophthalmologists do – so it's a bit of each. What we need to know is how we can help the child by providing the right environment. We've had a bit of discussion over K about a headswitch. He seems to be able to move his head better than his hand but one of the issues is that he seems to turn away so he can't look.

2.6 PP-A
2.6 PP-A

Communication

We have a speech therapist who is also feeding co-ordinator and communication specialist and she uses the information quite a lot in deciding what kind of communication aid. She might like to know whether they can use pictures or whether they are at the stage of more symbolic communication.

7.6 ST:DM

So then it is much easier to know. She will come in when I am having a look at a child, as I will go into other areas. I like to know how they respond in PE for instance or walking. I think she does go in to the MSE.

Timetabling

We have timetables. We usually leave some times blank. Shropshire social services have A SLOT when they use it and have brought mothers and babies in. Visual stimulation more than anything

(1.5) PE-U
(3.3) CP-T

Space

I put round a little checklist to see who used it and how. One of the groups had used it for drama and you can get more children in and you can get effects like the thunder and lightning. But on the other hand that little division that comes across is sometimes nice if you have a child who likes to feel the size of space it's in. The little foyer we're hoping to put different low-tech things in that can be changed around. The art teacher made the things in there. One suggestion was tactile tunnel, which you could go inside – that would probably be quite nice. There are children with a profound hearing and visual loss that don't get a lot out of the stuff we've got at the moment. There isn't much except a bit of air blowing or vibration from the bubble tubes. But we haven't got much which isn't visual. It would be really nice to have things which vibrated at different frequencies. We have student in the continuing education dept who has no sight or hearing and very little taste but he does love to explore different things and to have an environment in which you could have different things perhaps on a theme. He is really needing to feel free to explore but is needing to learn that there are places where you can explore and places like cafes where you have to sit still.

1.5 PE-U

(1.8) PE-D

(1.4) PE-MAT

Scmpr (6)

MSE- Interview with Laura and Chris [redacted]

44:33 Q when you were setting up the two rooms how did you decide what you were going to have in them ?

Chris- I did spend quite a lot of time talking to the staff because we had a lot of sensory equipment that we used in the classes. We used to make blackout rooms or light rooms, little light corners in the classroom. So it was really having a permanent space for those lights and fibre optics in a specialised room. And I spoke to Mike Ayres quite a bit for him to suggest what he had to offer and how that would match with what we actually wanted. (1·4) PE-M

Q- what sort of budget to allocate ?

44:64 Laura- we were lucky because we had a donation from a parent, in fact 3 or 4 donations in a series from the same parent .... From a child who died so we had quite a decent budget to allocate to it. (1·7) PE-F

Q- did they say how they wanted it used ?

Laura- No, just that they wanted it to be used for the children, and we knew that they wanted to make a significant commitment to some static sensory rooms, so we decided to spend it on that. That decided our budget which was {both together} £13,000 for the equipment. The room was part of the main building, but we were able to have the electrics put in..... (1·7) PE-F

Q- have a diverse group of children, how did that effect what you would or wouldn't have in those two rooms ?

Chris- we did mostly prioritise phases 1 and 2.

Q what does that mean ?

Laura- we have essentially a developmental curriculum within the school so we give access to the National Curriculum on 4 distinct levels, and the earliest stages can be described, I suppose, as a sensory curriculum so these are children in our blue and our 45:06 red classes and we decided to aim the sensory room mainly at them (3:6) CP-CC

Chris... from what Mike Ayres suggested we could afford we then prioritised, we did actually have Phase 1 and Phase 2 spend, if you like, and we could buy most of what we planned for Phase 1 because we had enough money and we still have a few items that we're hoping to raise money for over the next few years to add to the light room and the dark room. (1·7) PE:F (1·7) PE:F

Q what do you still want ?

45:29 Chris- a colour games panel for the dark room which is more of an intellectual.. children can play games by touching shapes and colours, so that's one we hope to (1·4) PE:MAT

have but its another 1,000 and we couldn't afford that so we bought a few smaller things.

Q you'll add to over the years ?
Chris- yes there's room to add but we do have all the electrics and all the foundations built and the call centres that we can plug the switches and other things into.

45:41- Laura So overall we were looking for a range of things that would have a quite dramatic effect that the child could control so it was a question of choosing a range of switches so that every child could hopefully be able to produce that effect themselves and a range of toys that would give one single dramatic effect but a lot of different effects as experience has shown us that some children liked the fibre optics and others were more impressed by the small bubble tube that we had. So we wanted something bigger, more dramatic so I suppose (?) it was also about consumer preferences.

Q- c how it fits in with the School development Plan ?

Laura- there is on our plan there is to further develop the early stages of the curriculum and we are re-writing the formal document to take into account what we've learnt over the last 5 or 6 years since the basic curriculum went into being. And a part of that is sensory stimulation and sensory awareness, but obviously that's not just about the sensory room but about activities throughout a child's day and as part of that is to identify other things we had to buy, some of which will, no doubt, be a lobby for the £1,000 colour game panel, but then there also are other things that people need in classrooms to develop the same skills which maybe work most dramatically in the sensory room and therefore ? use those in their everyday lives

Chris- it is ? everyday lives because at the base of everything we do is communication and so whatever we do in the sensory room is exactly the same as what we do in the classroom but it just gives us a slightly different environment. Maybe a little bit more exciting environment for some children, especially those with visual difficulties because there's less interference, less distraction. So it is linked with our IDP the fact that we go to the sensory room and that we go to the soft play room, that we go to adventure play, the same goals come from our IDP that go right across the curriculum.

Q ?

Chris- some of the children have their own switches, and bring their own switches to plug in, because some children have a head tilt switch. A wrist tilt switch. The switches that are in there are basic switches that any of our children can use, that require a very light touch, but the children do bring their own specialised switches to operate some of the equipment.

Q- Timetable- who decides how much and who gets time ?

Chris- its mostly a 20 minute slot- that's for 2 children and 1 adult, that's 2 children and 2 adults, is really all you can have in either of the rooms and so we allocate the children 15 or 20 minute slots and different classes get an allocation. We work the

timetable out together; people bid for times in the sensory room and they have to justify why and when, some children may get 2 sessions a week in there, because their needs are such, that that's the one place they respond, more positive way, other children maybe don't respond 7.6 ST: DM

46:43 Q- safety and checking who has responsibility, how does the system work ?

Chris- well myself, and we have a classroom assistant, she checks it out once a week and if there's anything that's like a problem, they let me know straight away. One of the fibre optic solar connections, projector, has been fusing quite a bit and I phoned Mike and explained to him it seems to be overheating and he's sending us some stronger fuses. But they would tell me straight away if something was wrong. The staff are quite vigilant if there's a slightest problem they'll let me know. 1.6 PE-HS

Q- yearly contract to check ?

Chris- No, like the whole system, like with different things they do have a service contract but the equipment didn't come with it. Although Mike Ayres is available on the phone. I have phoned a couple of times when the switches flicked off and he's sent me a tool that I use to just tighten it up- there's a certain allen key that he's sent me.. and I tightened it and it was fine. They're pretty sturdy the call centres and switches and safety-wise they were all mains proof or whatever, he did assure me when he was fitting them. 1.6 PE-HS

Chris- I'm the teacher with specialist responsibility for physical difficulties so in a way I monitor the teacher's timetables, the children's programmes, the timetables for children with physical difficulties, and another member of staff works with the MSI teachers and children so we do monitor the children's goals for 6 months then the year and cross reference the curriculum balance, the timetable, to ensure that each child has had a variety of activities across the week but not particularly for the sensory room but that's 7.5 ST: R 3.7 CP-EV
47:03 just part of the child's timetable for the week.

Q- issues about staff development that might co0me out of looking at it ?

Chris- when we first had the two rooms set up I did do some training with our classroom assistants and our teachers of why we use the sensory room, and what's the purpose, what the goals might be for certain children, that it wasn't just go in and switch all the lights on and have quiet time. It was for a special purpose, so we did do some basic training when we first got the room set up, we haven't got any plans really to.... 7.4 ST: CPD

Laura- it's come up as we've done some training on visual impairment. We've talked about ways of assessing vision and ways of developing vision and there was quite a bit of discussion about the sensory room that came out then, so they were quite new and people were just getting to use them. I guess what will happen as people get beyond the initial stages of seeing children's attention develop, then it should really come up that OK, where do we go from here, and particularly how do you decide that 7.4 ST: CPS 2.6 PP: A 7.6 ST: DM

ST: DM the child has had enough of the sensory room and they need to move onto other things. I think that at the
47:37 moment its so new to most of the children and staff that probably the basic training is enough but there will be issues.. moving it on beyond an exciting toy because it has to be more than that at the end of the day. 7.4C ST: CPD

Chris- and then... I did do [session with parents] about the light room and the dark room to explain to them some of the purposes behind why the children use this type of equipment and explained to them that it wasn't just the answer because quite a few of them said, I'll get that for the bedroom then they'll be OK ot light up at night.. so there was quite a bit of training to do for people to understand why we do use these lights and sound effects and the parents were very interested, but they did think it might be the answer, often you know, something to grab onto. I'll get that because I don't know what toys to buy.. just talked about general things, sensory experiences, walking outside in the buggy, in the pushchair in the park, the wind and the rain on their faces, and I said that's the most wonderful sensory experience you can have, you don't have to go in the white room. And they did realise that they're doing sensory things all the time with their jewellery, their make-up their perfumes, said you're doing it, you are the sensory experience, because they felt I'm not doing all that wonderful sensory stuff because I haven't got the room there..

7.7 ST: CoL

7.7 ST: CoL

3.5 CP. L

Q- something about technology.

Chris- wonderful for the children, its how to use it, of course, it *is*
wonderful, its lovely, the staff love it and if the staff love it then the children actually get the vibes as well and find that this is an exciting place to be with different things to look at.. 7.3 ST: A

Laura- I guess the other thing is about relating it to the curriculum the child's following rather than 20 minutes excitement once a week, although we could all do with 20 minutes excitement once a week I guess ! 47:90

3.5 CP-L

3.6 CP-CC

Q- what advice would you give to someone else ?

Laura- first what your particular client group will respond to, from having things in classrooms or maybe going to somebody else's sensory room and picking out what's the most successful with the particular type of child you have and I think also the preparatory training so that staff start off with a clear understanding of why we've spent all this money on this equipment.

3.6 CP-CC

7.4 ST. CPD

Chris- yes its not easy to order it, there's no way we could have done that, most of the things we've got in there, I think, apart from the sound and light panel, which is in the dark room, its a cassette and you can plug a microphone into it, its just a car cassette radio, and the children use the microphone as a switch, and if you make sounds, the patterns splash onto the light panel and we'd not seen that, and although Mike explained it to me, and it sounded good, I said I want to see it first so before he fitted it, he showed me how it worked.

Q and has it been effective ?

Chris- yes, so many of the children, just a little breath and the microphone is finely tuned to pick up the child's just breathing and then they operate the lights and the sounds come on the screen and that is a great favourite. (1.4) PE - MA

I think we limit the children who come into the sensory room because of the expensive equipment- the fragileness of the equipment, although maybe it would be lovely to open it to the wider school at the moment we don't, we do keep it for the children with more sensory needs. I'm sure it would be wonderful for many of our other children to come but it would just be a nice experience for them, the goals wouldn't be as specific as for our children who maybe track or look around or respond to something. The m0ore able children would love it but it would just be a bit of a treat so we have excluded them as far as the whole of SILD goes, at the moment.

(1.4) PE MA

(1.5) PE-U

48:53. Q- about Chris' teaching session and what she was hoping they'd get ?

Chris- Sarfraaz is a little boy with cerebral palsy, with limited movements of his arms and his legs, so for him, my specific goals were for him to actually move his arms to touch the switches, but he's very good with his vision, he really looks into the mirror, peepbo, so his vision is good, but the goals for him were more on the physical side, for him to roll over into the fibre optics, for him to touch the switch, and for him to ask for more, and for him to reach for the rods, and for him to release them. Because that's very difficult for children with cerebral palsy , which he's been doing in that session so well, but in class he doesn't do it so well. When he's holding his spoon he can't release but in there he often, he does release. It's really interesting. So for him it was more on the physical goals. For Angelique, a little girl with vision difficulties, for her its more focus on tracking, for her to be looking around at things, which she moves her head quite a lot, but she does start to focus in there on the rods particularly. She'll reach for them, she'll find them when they are on the floor. And when we put the fibre optic carpet on, she tries to pick up the little things- that's when all the other lights are off, which is what we did later. She usually crawls towards the fibre optic strands but she was a bit more interested in you today.

(6.4) CP-N

(2.3) PP-IF

(2.3) PP-IF

Comment- she's very sociable isn't she ?

Chris- yes she was quite aware that you were there. I think she wanted you to come and play as well, but she does usually crawl around and, as I say, she will reach into the fibre optic strands and she'll pick up the rods and hold them and tap them and for her its quite a focus on the vision and Sarfraaz on the physical side.

Q - ?

..she's not that tuned into cause and effect at the moment, she just taps, she knows that something's happening but she's not really as aware that when she taps it comes on and when she taps it goes off..... she's much more of a sociable, yes when she was sitting on my lap she wanted me to be touching the switch, to share it with her and we tend to do that more with her than with Sarfraaz. We're using a switch for him to learn to operate it when we're not there. 49:28.

(6.6) CD-I

(6.8) CD-C

[redacted] Primary School

Interview with Deputy Headteacher

We have had Angus playscheme wanting to use it and Guide groups and we have had to go into difficulties, such as what would the caretaker do to supervise it and so the Directorate said that it had to do with education and had to be within the school day. So far the groups who are using it are an outside nursery group – a special needs nursery. All of our school have been told about it and I think they have to go about thinking how they might use it but we've had a really busy year. We've had an inspection y'know it takes... So it's a nursery from Arbroath and a nursery from Brekon with special children. They tend to come with parents (if they have more profound needs) sometimes Mum and Dad both come and she (the sensory co-ordinator) has a number of them at once. It's useful for the little ones, the toddlers – she has had some good reactions.

Recording

Murdie asked her (the sensory co-ordinator) to write out .....So it's used by all these external groups. They contact me and I deal with the bookings. I've got a timetable and when they come here they log in. I've got a thing (form) for them, they just log in. We can tell who has been here and for how long. The other thing we are hoping – we'll keep a file with this (the login book). We are hoping to get this going next session. Again. It's just so we can see just how many children – what type of children and how often they come –so we are hoping to get that up and running. I mean it may be added to or altered slightly, that's a sort of starting point.

We obviously use it (MSE) because it's right beside us, (much) as we use the sand or waterplay. You'll say – you've been working really hard, you can now have ten minutes, choose a friend and they (the two pupils) can have ten/fifteen minutes there. We send a member of staff. We must have it more planned next year. We have a Thursday activity group when we split up into four groups and one member of staff has responsibility for a group of children. That group of children rotate and will have one member of staff one week when they will do cooking or baking, then sewing and then we go out and about, we call it 'social', we go to a café. Next year we are going to plan five groups and one of those groups will have an afternoon in the studio, which'll be planned for that group of four children.

Needs

We've got to see how the children fit in – we've got a lot of...there are six children coming up from nursery and they have quite diverse needs. It might be better to have a mixed ability group. So far things have been better. It's almost like a family grouping you are not putting the onus on the older child to parent the younger one but it usually works much better you can...there's a

much better learning situation for the younger child or the child without language...with not just an adult model but an older model. So possibly we'll have it as a mixed ability, mixed age grouping then we are going to suck it and see as they say. So we are actually going to have it (the use of MSE) programmed rather than being just casual.

2.1 PP-G

Examples of use

We had a really successful time, it was arranged by our art specialist. We were doing 'how people used to live' y'know the things that are always the same – food, shelter etc. So we were looking at early experiences of cave people. It was hugely successful in the studio, the darkroom was set up with sticks for the fire – we rubbed the florescent sticks together really hard. Someone – a member of staff, just flicked on and off (the ultraviolet light) so it just sparked. Then once they got going and the fire was on all the time, we told stories about those days, what animals did you meet. Then with the echo panel we made noises like wind through the caves or storms or animal noises and all of these things were superbly successful. The fibre optics hanging down we made that into a pond with sparkly fish and fished those out with sticks. We have children with low muscle tone. The motivation to fish these fish out was amazing. We use the sound and light floor for helping children with colours, find two reds or light up a red and a green.

3.2 CP-CC

3.6 CP-CC

Maths

We've got the different shapes (under the UVA) to reinforce what we are doing here (in the classroom) with some of the younger kids.

3.6 CP-CC

Other

We had a fairground with a fortuneteller with wheel with the signs of the zodiac, which rotated; the art teacher did it. Our fortuneteller was telling rather ridiculous fortunes. We use the infinity hut for telling stories, particularly with children with a poor attention span. We have one poor wee boy – he's off today but his attention was (all over the place). He couldn't home in on a story. He went into there (the infinity hut) with two other children and he (concentrated) answering questions and now his attention is much better and he has much better listening skills. It was a bit of a breakthrough – maybe he would have got better anyway but...

3.6 CP-CC

3.5 CP-T

Use by other members of the school

The most spectacular one was Yr. 7 last autumn. They always do a topic on the war. At the end of the topic when they have explored what it was like to be an evacuee they has to imagine that (the studio) was an air raid shelter and they had all the lighting just right and I'd been producing a play that was set in the second world war so we had a tape that we'd mixed with all the sounds such as the bombers coming in and then we flashed the lights to make it look like a searchlight and then the bombs falling. The sound of the bombers disappearing and the crackle of fire and the mood was fantastic...chilly. After that we kept the lights low and we sang war songs and it was very, very

3.6 CP-CC

moving..,possibly the most superb thing that's been done in there. But Primary 7 will be doing that again in the autumn we re-enact it for other years.

It (the studio) is often used as an experience in itself. It tends to happen more in a casual way (staff ask) "Oh could we have the studio this afternoon" and it's done as a sort of reward/respite and it's enjoyed for itself, the way that Christopher's enjoying the sand just now. We are not going through a programme; it's just used because it's there. We use it every day on a casual basis; again the ball pool is a great favourite with children. (1.5) PE-U

Physio

That's Natasha and a wee boy you haven't seen today. They go in there once a week. So she (the physio) showed the TCAs what the exercises were and they do them (with the children) four times a week. Martin is a cerebral palsy boy who walks with a rolator. He did have a problem so he got physio as well. They are much more keen to do it and they put on music. He was absolutely cheesed off with doing physio. He did have lots of problems anyway – very vocal about not wanting to go to physio and the physiotherapist had to cajole him to do his exercises and when he went in there (the studio) he apparently did press-ups which no-one had ever seen him do before. He got to bring in his own CDs, he brought in music from home, it was very important that he kept bringing different stuff. Because it's (exercises) very boring and he'd had to do them all his life and it was important that he kept doing them. (3.3) CP-T (6.8) CD-C

History of Studio

The pre-school visiting teacher said that he had seen some wonderful MSE and how about having one here. So interest was sparked. We used to part of Tayside which was Perth, Dundee and Angus and this was just after we had all split up again into discrete districts. We all had new directors of education etc.etc.If a parent said I want this or that for my child we wanted to be able to say OK you don't have to go out of Angus to get it and this was one of the things ..We could get some multisensory equipment. So they began to look at where they could set it up and we had a suitable area. Richard Hirstwood came up and gave us a training day. Representatives form every service were there to see and hear and I was thinking it would be great if it was in the room the whole room. And he said this would be a wonderful studio and I thought that was a great name. It was serendipity really. Maybe there's other reasons but I'm not privy to them and then the Scottish Office came up with a bundle of money and instead of just a little thing we could make full use of the room. We were going to get phase 1 and then phase 2 the following year but the first bit had to be done before the end of March and weeks later it was OK go on with phase 2, so by last summer just by holiday time it was completed with all the details completed. So we have actually had a full year of it (the studio) like that. It just takes time to change your way of thinking and develop what you are going to offer. But certainly we've got clearer ideas but it has been well used by us —it could be better used by us and the rest of the school..very useful. (18) PE-D

Training

Training day – no it wasn't for everybody. It wasn't a training day. It was really Richard coming to sell the idea I suppose. And then after it was set up there (in the studio) we had a training day. Mike was here. I think he still had a couple of guys and they were still putting up various things and we had one day where there were representatives from different services like the hearing and visually impaired, They use it but not very much. Hearing impaired haven't used it. I think it has been used maybe twice and the visually impaired maybe four times but I think they are hoping to have it programmed for maybe next session. So these people were here (for the training day) and they brought some children with them a pre-school child, two visually impaired, primary aged children and there was all of our children. How we worked it was two of our staff went in for a while and then some of the other staff went in so we could all learn about the switching while Richard and Mike went around working with the children whirling things around and putting fibre optics into the ball pool. Telling us to get the fluorescent paint going. How other staff get involved – she (the teacher who did the World War 2session) came to see me and I helped her set it up. She alone stayed back one night and we went through it all. On inservice days we've had a rolling programme and staff can have a look see. On another day we say we will be available for staff to come in and use the stuff and ask us questions and now we hope to do that again next year. Other training – anyone involved for support for learning could come along. We had about forty-five people from all over. We had some nursery people and some primary school people, family and child centre – social work people came to look at it. They came back yesterday to see. So this is the history of how we came to get this and here's what we've got but I've suggested to the Assistant Director and our support for learning that we ought to set up three days over the next session where people can come and hands –on come and learn about the switching and how to use it – for people who want to use the facility. But there's always so much to do in education. You're always chasing to get everything done. But I'm certainly going t keep mentioning this. Y'know people should be using it more but I think that some people are reluctant because they think they don't know how to use it.

7.4 ST-CP

7.4 ST-CP

1.5 PE-4

7.4 ST-CP

7.4 ST-CPD

1.5 PE-4

What has been most successful?

1.4 PE-MAT

The ball pool is the universal success. After that I think the light and sound floor, the UV facility as well. I like the infinity hut because if you are going to sit in there and tell a story it is rather nice. The children like to go into the UV room and fiddle with the objects. They tend to go for those rather than the ones that hang down. I would say the sound light floor probably. The mood setters – I like that facility, they are excellent. You can have it really bright of low or no light with a projection of what you want or white curtains and I like that.

Children

When they (children with hearing impairments) first went in and were running around and touching everything. They went up and hugged the bubble tube and said that they could feel it – both said that. Nobody had said can you feel it...Debbie (who is autistic) likes to sit in the middle of the bubble tube area and look at herself in the mirror.

Script (8)

Headteacher: [redacted] Primary School

Establishment of MSE

We had meetings with the Director of Education about what would be needed in the area and we had a clear indication that an MSE would be an asset not only to our school. After full discussions with peripatetic and support services it was decided that we should establish the studio in our school. It was established in our school because we had one of the largest support for learning bases in the area. I believe our staff are well motivated, innovative and are prepared to pick up new ideas and run with them and meet challenges if they think they are helpful to the children in the school. So I think it is a compliment to the staff in the school. We liase with outside agencies and parents to ensure that the whole exercise is successful in support for pre-school children in nurseries but others with sensory deficiencies and special needs. From early days to secondary school – we encourage those people to come here. Just the other day a secondary school who felt it would be an advantage with a youngster – an adolescent with her mother to come in and work with our staff. I think the whole of the community now knows it is here. Some (know what an MSE is) and some don't. That can still be a problem because those that think they know what it is want to come because they think of it as an exciting place to be but they perceive of it as a social exercise and we are committed to the studio being used to enhance teaching and learning, it is not simply there as a recreational service and that might have been a problem. Any individual or group which uses the facility needs to identify the educational aims and outcomes before and after using the studio. Sue has the job of putting together the timetable and it's her who has to juggle the competing demands. We are committed to the studio being a community resource and we'll play our full role. All persons are included all we ask is they have a very clear idea of the purpose they want to use it for. There is a form to complete and they indicate which equipment they want to use and what they want to do. Because again it is important that the equipment in the studio is used for specific purposes. It is unusual – in fact I don't think it would ever happen that all things are working all the time. It becomes an Aladdin's cave for some people and they just want to see lights flashing and music playing, cymbals crashing – which is great fun and we believe in education being fun but it also has to have a purpose.

1.8 PE-D

7.8 ST-A

7.7 ST-COL

3.6 CP-CC

6.7 CD-O

1.2 PE-ORG

I think that technology does set a status but I have to say that prior to the establishment of the technology we did have a soft play and ball pool and activities for young people out with the normal, if you like, in the classroom environment so we have tried to develop exercise and therapeutic exercise for young people prior to technology coming in and of course the high tech dimension.

6.3 CD-ST

6.2 CD-IC

The Future

I know what will happen two or three years down the line and that is we will continue to develop the resource. We need to innovate and will continue to look at different ways of meeting youngsters needs; I have no way of knowing where technology is going to be in ten years time. If we continue as we have started and that is to say that we establish a studio and facilities to meet need we will keep pace with the technological developments.

Who decided to call it the Studio?

We did, yeah we did – we went through several names if you like multisensory room – we went through a whole variety of names. The main thing is that it is a flexible resource. It is there to meet need in terms of special need but it can be used as a drama studio, a music studio, it's there for all the community to use. So studio as well as being a more attractive name also reflects the more multi-purpose use the school gets from it. The way the school runs indeed is not top down. We have a structure in the school in which we co-operate to develop all policies. It wasn't a conscious decision to call it a studio it developed and indeed once we realised just how flexible the resource was it was a more appropriate name for it.

I think that's a very important point. The learning support base and the nursery are both integral parts of the school. That of course has two sides to it because what facilities they have are also used by the whole school. And when we established the studio we had inductions for all members of staff to familiarise themselves with the equipment that was down there and to have some degree of training on its usage. That in turn allows them to use the facility as and when required. In particular drama and music.

Interview Transcript- Anne [redacted] Scpr (9)

Q- what did you want her to achieve i.e.

I want her to be able to transfer her attention from one switch to another so that she will quite happily understand that she can touch a switch to activate perhaps a fan or some music and I also want her to be able to visually track the switch which was why we've got the silver paper. CD -C (6.7)

5.10. ....but as I want her to actually reach out and look and use the vision that she's got to find the switch on the table and to understand that it's that particular switch that is activating the fan and I want to then introduce another switch and see if she will transfer her attention from one switch to another and understand that she's got a choice of having wither the fan or the music. And last term she actually achieved that and we're now introducing a third switch into the programme which unfortunately you didn't have a chance to see but.. its basically having a choice of 3 things that she can then have some control over to activate whatever sensory reward it is and to build up a list of preferences as well so start to change the reward so that we know she likes the fan and we know she likes music and we try and get different types of music. We've tried light rewards but she doesn't particularly respond we very well to but I would like to build up her visual (6.7) CD-C (6.9) CD- (6.8) CD-C

5.48 awareness so we'll persevere with using some sort of visual. The point with Kaley is that she will understand that she can make choices and we have a communication board which we put objects of reference onto and we ask Kaley to reach for the O/R at the moment its for activities, and try and build into a choice of activities giver her a choice between 2 activities and see if she can select the OR off the board and then immediately receive that activity as a reward and we would do the same with the switches in terms of once she shows a preference of an activity that she enjoys we would then like, I say I'm wanting her to understand which switch triggers which reward then she can make a (3.2) CP-C (6.8) CD-C (6.8) CD-C

6.3 choice of a leisure activity or what it was that she wanted, to give her some control over her life.

She has quite useful hearing so she will get distracted by the noises

me then we saw Pierre whose got no vision.

At one time he used to get very distressed so we, it was clear he was making choices of music in terms of he would get very distressed if a piece finished that he particularly enjoyed or if someone put on something that he really really hated, he would scratch his face and get really upset so it was quite obvious the type of music he enjoyed and you could see on the video his expression and obvious enjoyment of the music so it was *the* most motivating thing we could find in order to use as a reward in order for him to use the switch. He's very tactile defensive, he doesn't tend to reach out and grasp anything without adult intervention. (3.2) CP-CP (6.8) CD-C (6.7) CD-C

6:51 he doesn't explore the world around him so that's why, my aim is for him to understand that he has some control over the world and to search for that control so at the moment what we're looking for him to do is understand that he can uncurl his fingers, touch the switch, activate the music reward, enjoy the music and when it (3.2) CP-C

stops do the same again with the aim of moving it further and further away so that he'll have to start to explore because until he does that he's not really going to learn.

6:77 Me- why choose that switch

Its easy, Its easy to activate, he had a similar switch which he used as a head switch but its not the way I want to go with him because I want him to use his hands. I think, he needs t0o use his hands.. because having no vision its very very important.. And so its easy, and because it doesn't need a lot of pressure so he can rest his hand and trigger it and I'm hoping.. he doesn't appear to have made the link yet but I can't quite decide whether he hasn't made the link or whether he chooses not to.

7:08

me- that was work with the intervenor so is there a system for her to share how that session went ?

Yes, she records, everything is recorded on paper and at the end of the day we have 5 minutes and we go through everybody's programmes and discuss how it went and where we can move them on.. they also.. I also ask them to write a comment if they find something's been particularly successful or not successful at all or if they think there's a new objective that can be introduced they'll write that down.

7:33 I try and work with all the children as well, certainly when we're setting up the programmes.

Q about routine

and he would understand that work represents switch work

Me asking about Daniel

...sort, use language of measurement, shape and number and all the children have a baseline assessment and therefore they're working towards that mixed level and there's a huge jump from being able to access things the child wants is the Level 3 and things he can do, and find something in the room regardless of the obstacles. So therefore the next level is for him to move onto these 4 areas of maths. So I was faced with trying to get him to sort and we tried sorting colours, and it wasn't a successful programme, we just had pieces of material, just 2 colours to sort them into, but because he showed interest in the bubble tubes I then thought perhaps it might be the way to go with him in terms of getting a definite understanding of the spoken words and the signs for colour and also ..... so he has a block with the colour on and the idea is that he will match that colour and build up his understanding of colour, he apparently, after that session Annette came to me and said when nobody was actually there he picked up the red one and signed red. So he's a difficult one Daniel in terms of I don't doubt his understanding, whether or not he'll do it, he likes to make his own rules and he likes to discover things in his own time and there's certainly room for that and that's how I believe he's come to progress so much in that he spent a lot of time in the Snoezlan room, he spent a lot of time with the switch, triggering switches

to get various light rewards because light was most stimulating for him and that seems to have then led him branching beyond that and look at the world and decide I enjoy this and since he's come more mobile he's found things he can use and he goes and gets them and plays with them and is more motivated by people as well now than he originally was. But I don't want to go down the line of light rewards with him because I feel that we've moved on from that and then he gets distracted by the lights and having watched him do that, he tends to hit anything to get the light reward, he's not actually thinking what he's doing and he is starting to find praise motivating so I feel that's certainly the way to go perhaps using the bubble tube is not the right thing because he's enjoying the whole experience but he's not necessarily differentiating between the colours.

Me- maybe he is but not when you're there.

.....but not when you're there which is very Daniel but then he's persevering so I think that I feel he's aware enough to pick up something that's red and put it with other red colours and the same with blue. He just chooses not to and like you say, its finding something that's motivating enough in order to prove that he can.

..she enjoys it but she enjoys the environment so much that she's very reluctant to do it so she's very passive in there and if you can try switches and she just objects.

Certainly with my group it doesn't give any opportunities for mobility so the children can't move easily in there in order to access something and as an awful lot of my work is involved in motivating children to move and access the environment I find them very restrictive places plus it only really gives visual rewards which is fine if that's what motivates but it doesn't always motivate and also in terms of everything being on its too much , too much to look at and it bombards them. I think it has a good place in getting children interested perhaps and looking but once they're at that stage there's a whole world out there that can give them many more motivating things, I think personally.

Me- something about routine

..before a child went to any activity, we use them in a timetable setting so we introduce

09:22 the activities of the day and then the children come and collect the OR and take them to the activity with them, reinforcing the word all the time as they go to that activity, so hopefully they'll build up that understanding. Most of my children have that understanding apart from Pierre. They understand that the OR or the symbol or the photograph represent that activity and they'll reject it if its something they don't want to do as well so in that sense that helps to build up... but they do have that ability, they understand, and you'll find with Chris' group there are certain OR that represent activities that they fully understand, which are usually drink and dinner. But some of the other activities, no they don't have that understanding but to have respect for the child and .. that they will build up understanding over the years then I think its a very important thing to do. We have Ors for names as well for the children who have no vision we use OR for them as well but it is quite a hard concept to grasp and they will only grasp it through continually reinforcing it, and therefore knowing that they always have that object when they go to that activity.

10:47 All new people coming into the school have an induction day and if they were to work, if allocated to a child in this unit then Chris and I would talk to them about switches and go through the switching system with them and like I say when we're setting up new programmes with the children and the intervenor would come while we set up the programme and we would explain how to use the switching system, what we're looking for.

Me- difficulty of getting the intervenor to realise about how to foster control.

Its something that I believe, with a lot of repetition, some point the child will make that link. If I suddenly thought I'm not getting anywhere with this, I'll stop and give him a lever switch or something. I think we would have to start again I need to say that's the action I want him to do initially.

Me- so that's a very early action whereas that lever movement is quite sophisticated.

..and again he has the motor skills to do that, he just doesn't and it would me much harder.

10:99 Cut to Chris

Appendix 4

Collated Interview Material

Some of which will, no doubt, be a lobby for the £1000 colour game panel but then there are also other things that people need in classrooms to develop the same skills which maybe work most dramatically in the sensory room and therefore use those in their everyday lives.
But it's another £1000 and we couldn't afford that , so we bought a few smaller things.

1.8 PE: Development

So we put the two things at opposite corners and Chris and I sort of sat down in the middle with a bit of paper and talked about what else we would like
I would particularly like to create an interactive hydro therapy room environment which is something we have lots of ideas for, also the thing about the interactive room as we have it now is that everything is portable, the soft play equipment and the ball pool bit. I would like something much more permanent. I would like to take the fibre optics further and have a wall of black fibre optic carpet with perhaps luminous hands on so that if the students touch them they are at face level rather than floor level. And the other thing is from this idea (the wall display) creating corridors or walls that are multisensory

After full discussions with peripatetic and support services it was decided that we should establish the studio in our school. It was established in our school because we had one of the largest support for learning bases in the area

I know what will happen two or three years down the line and that is we will continue to develop the resource. We need to innovate and will continue to look at different ways of meeting youngsters needs; I have no way of knowing where technology is going to be in ten years time. If we continue as we have started and that is to say that we establish a studio and facilities to meet need we will keep pace with the technological developments.

..myself and two other members of staff, we were asked if we would like to do it. We said yes, so basically we got a load of magazines and brochures from certain companies that make goods for special needs. And that was basically it, we just went through the catalogues and we sort of went through the students that we had, and tried to get as much equipment that would be useful to all of them, on the amount of money that was given. (1)

We had the first part about ten years ago (2).

Then we had the dark room with the ultraviolet light. Which has quite limited use. We tend to go in there with one child for a very specific reason. (2)

The little foyer - we're hoping to put different low-tech things in that can be changed around. One suggestion was a tactile tunnel, which you could go inside – that would probably be quite nice. (2)

It just takes time to change your way of thinking and develop what you are going to offer. But certainly we've got clearer ideas but it has been well used by us – it could be better used by us and the rest of the school..very useful. (5)

There's room to add but we do have the electrics and all the foundations built and the call centres that we can plug the switches and other things into.

2.1 **Policy and Planning**

The way the school runs indeed is not top down. We have a structure in the school in which we co-operate to develop all policies.

It (the policy) is reviewed bi-annually as part of our ongoing review of every policy document we have in school ...

I take groups of children and work out what we can do and feed that back into the classroom

So possibly we'll have it as a mixed ability, mixed age grouping then we are going to suck it and see as they say. (5)

The policy document was actually written before we got most of the room. It sparked off from our ideas on what our vision was about the room.

I think that technology does set a status

2.2 PP: Pupil Grouping

we wanted to make that very clear to the other members of staff – it was not just something we did nice on a Friday afternoon – it could be something nice but it is an educational tool. So in that way we justified the expense of the equipment because it is not a cheap resource.

We do have group work, but there again, the vocabulary and the questioning is asked to individuals. (1)

We did start off having groups in here. We said that 2 children and 1 staff that would be fine, because we have access to phones, or whatever should there be a problem. But we did find that was becoming a problem because a lot of the students felt like it was intruding on their time, their individual time...(1)

2.3 PP: Evaluation

I would record that there was a definite recognition of when the bubble tube stopped, because that's something that's developed, not recently, but over the last few months. (3)

He had no way of starting it up again so that he's (now) recognized that it has stopped and actually that he can do something about it. So I would record that, just on an open format recording sheet (to show) what they have done during the day. (3)

..its under an open format, and then what I would do is use that to look at, because we have various targets that are set down during the year, and then look and see what happened during the day and then you might be able to link it to specific targets. (3)

So it is linked with our IDP, the fact that we go to the sensory room and that we go into the soft play room, that we go into adventure play, the same goals come from our IDP that go right across the curriculum

The goals for him were more on the physical side, for him to roll over into the fibre optics, for him to touch the switch, and for him to ask for more, and for him to reach for the rods, and for him to release them.

For A, a little girl with vision difficulties, for her the focus is more tracking, for her to be looking around at things, which she moves her head quite a lot, but she does start to focus on the rods particularly. She'll reach for them, she'll find them when they are on the floor.

2.4 PP: Assessment

Kevin is particularly difficult (to assess) because he has no formal way of communicating so it's very difficult for me to understand whether he can recognize..(2)

..we feel he can recognize people by their faces or perhaps their clothes. He also shows quite an excited response to things like his drink mug, so we do feel that he has quite good vision for recognizing..(2)

We have had several children over the years who have come in (to school) and no one knows whether they have any sight at all but then you may notice some response to light, then under ultraviolet light you will find a response. (2)

I have a checklist that people can tick to check responses to different things like different surfaces. From that we can get a good idea if they (the child) have a problem like depth perception, face or shape recognition. (2)

What I have found most useful (in assessment) is a narrative form but it comes under different headings such as response to distance, objects. Whether they can recognize photographs simple colour photos. (2)

It's also very useful for when the children have a clinical assessment, to add to that. (2)

We've talked about ways of assessing vision and ways of developing vision.

2.5

6.8 Control

He just chooses not to and like you say it's finding something that's motivating enough in order to prove that he can.

And since he's become more mobile he's found things he can use and he goes and gets them
We were looking for a range of things that would have a quite dramatic effect that the child could control so it was a question of choosing a range of switches so that every child could hopefully be able to produce that effect themselves and a range of toys that would give one single dramatic effect but a lot of different effects as experience has shown us that some children liked the fibre optics and others were more impressed by the small bubble tube that we had. So we wanted something bigger more dramatic so I suppose it was also about consumer preferences.

..only real modes (switches) we use actually are the momentary, the latched and timed. If you want to get a bit of space and stand back from them quite often you do use the timed one because it stops again they've got to make it start again. The momentary one is very useful when they are first discovering that when you touch it, it comes on and the latched is certainly useful when you're working with a child and you want it to run and then you turn it off. The tilt switch isn't consistent enough, its off when its like that, on when its like that and if I can't pick it up, I'm sure the child can't. You can bind it to their wrist, that makes it go on, and that makes it go off. Its obvious that inside there is a mercury connection but its not consistent enough. The other one is a movement switch which works exactly like a burglar

alarm at home and there again its either too sensitive, every time they breathe it comes on and off or its not sensitive enough and we haven't been able to get it wired up to suit the children at all yet really. (4) I want her to be able to transfer her attention from one switch to another so that she will quite happily understand that she can activate a switch to perhaps activate a fan or some music. I also want her to visually track the switch which was why we've got the silver paper. I want her to actually reach out and look and use the vision that she's got to find the switch on the table and to understand that it is that particular switch that is activating the fan and I want then to introduce another switch and see if she will transfer her attention from one switch to another and to understand that she has a choice of having either the fan or the music. And last term she actually achieved that and now we are introducing a third switch into the programme …basically it's a choice of three things that she can have some control over to activate whatever sensory reward it is and to build up a list of preferences. She has not made very much progress with her speech but she is selecting pictures and is using them as part of her communication. A couple of children have made enough progress so that no one would be in any doubt that they had some sight, even though notes say they are blind. (2) ..one child was in a wheel chair. He kept his hands under his tray and didn't want to interact. It was quite difficult. He did begin to be interested in things under the	

ultraviolet light and did begin to reach and did begin to reach out to bright things in the normal environment. At the same time he was beginning to walk and use a rolator. (2) At one time he used to get very distressed – it was clear he was making choices of music. He doesn't explore the world around him so that's why, my aim for him is to understand that he has some control over the world around him and to search for that control so at the moment we are looking for him to understand that he can uncurl his fingers, touch the switch, activate the music reward… The equipment is in the white room, so one of the first things we did was we took all the wheels that go into the solar projector, all the different picture wheels and we took them into the classroom and we looked at them just holding them up to the window and they (the students) decided that they liked the space one the best ….everyday lives because at the base of everything we do is communication and so whatever we do in the sensory room is exactly the same as what we do in the classroom but it just gives us a slightly different environment. ..if you have a child that doesn't like tactile activities, then you can try to encourage them, cos there's other things here that they like, you can say we'll just try a bit of that, that's nice, smell that, and you can go from there, and then hopefully you'd and up massaging the whole of their hand and then when you come to messy art, just feel that and its not so nasty for them..(1) With a lot of repitition at some point the	

child will make the link. We normally have something visual first, then listen to some music and watch the lights go round at the end. (2) We wanted to teach... we wanted to teach the students about cause and effect, about object permanence. We wanted them to have control over their environment and we wanted them to be able to make choices. The equipment that we have put in there is a fun way of doing that. It's really exploration of an environment. just serves the communication of what he wants to do, just playing, just hopefully having a good time together.. The point with K is that she will understand that she can make choices and we have a communication board which we put objects of reference onto and we ask Kaley to reach for the OR. At the moment it's for activities and we try and build into a choice of activities. Give her a choice between two activities and see if she can select the OR off the board and then immediately receive that activity as a reward. I'm wanting her to understand which switch triggers which reward and then she can make a choice of leisure activity) .. - to give her some control over her life. So we're not teaching anything different, we're just using another resource to do it. So you've got to be quite flexible in your way of working. Then I'll write it up and I'll report back to Derek that that's what came out of the story – perhaps he could do some formal work in the classroom with it. But it tends to work that the students, with their in initial idea, then that leads you on to you as a teacher, what skills you are going to teach them. You don't always	

Appendix 5

Extract from the text for guidance material

- **Colour coded for design work**

Multisensory Environments: The use of interactive technology

Introduction to CD-ROM

Images

Stills for this section from: Case study school for the Deaf
Interactive corridor
0.00.03 - woman enters corridor
0.00.13 – textures with central yellow card
0.00.20 – Black and white shapes
0.00.24 – bike wheel with coloured surround
0.00.30 – view of bike wheel and face
0.00.48 - dinosaur
0.00.54 – wooden board with red bobbles
0.01.04 – Black sheet with red bobbles
0.01.09 – multi-textures
0.01.17 – objects of reference
0.01.22 – objects of reference

Voiceover (sound)

Who is this CD designed to help? This CD is designed to meet the needs of teachers and others new to the use of multisensory environments. It can be used alone or as part of a training programme.
Five schools have been used as case studies.

Text
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PHYSICAL ENVIRONMENT

What is a multisensory environment?

Images

Case Study: SILD
0.14.27 – Cheryl against a shiny background
0.14.37 – Fish optics
0.15.02 - Fish
0.15.09 - Fish
0.15.33 – Cheryl with bubble tube
0.15.48 – Bubble tube (different colour)
0.16.1 – Cheryl with bubble and fibre optics

Case Study: Mainstream
0.10.12 – boy on coloured floor
0.12.17- boy playing with bubble tube
0.13.42 – boy playing with windchimes

Case Study: SLD
0.33.09
0.42.48

Case study: S*chool for the Deaf*

Image and Sound

Video: Chris Script 4 page 2
0.43.13 – 0.44.06

It is quite possible that many of our children will be using more and more sophisticated switching systems through the rest of their lives really. Switching systems as technology are just a glorified adapter aren't they really and we use them so much around the unit even if the adult has a switch behind his or her back. If the child presses the correct icon and the adult turns on the reward. Saves having a lot of complicated switches around. I suppose we're so used to them we don't think of them as technology. Computers are technology and most of my particular group are not desperately interested in the output of a computer on the screen.

Text

Multisensory environments are many and various. Most forms of specialist provision will have some form of dedicated space for multisensory stimulation. There is also increasing recognition that the school environment can also offer a wealth of sensory stimulation. For instance, corridors can be enhanced with interactive wall hangings to promote exploration or aid orientation.

Voiceover (sound)

How much space you devote to your multisensory environment depends not only on how much space you have available but also how much you can afford to spend on equipment. As you can see, one of our case study schools converted a small room to provide a sensory environment for their pupils who have communication and behaviour difficulties.

Careful planning is vitally important in order for you to optimise the use of space. It's also important to make sure you build in flexibility to maximise opportunities for pupils to make choices.

The really exciting thing about multisensory environments is that they encourage all members of the school community to get involved. Not only at the level of fundraising but also in providing innovative solutions to sensory needs based on everyday objects. A visit to your local scrap project if you have one will reveal great sensory treasures. A chat with parents can lead to a donation of unwanted Christmas presents or a visit to local shops will unearth objects left over from closing down sales. Windchimes for instance – perhaps not welcomed by neighbours if you live in a small flat but a great addition to the multisensory room!

Thinking sensory makes you look at the school environment in a completely different way. Corridors can provide a natural extension of the multisensory room and help to promote sensory awareness amongst not only staff and pupils but also visitors to the school.

PHYSICAL ENVIRONMENT

Do multisensory environments always have the same kind of name?

STILL of room name

SLD: Room Name(still)
0.55.34

Text
Multisensory environments are called by many different names. There are a wide variety of terms used to describe sensory environments. The name chosen and the way an environment is described is important for they can help to influence attitudes and expectations. Some names describe the way a room or space looks, whilst others concentrate on function. The following list is far from exhaustive but does give some indication of the breadth of terms used:

White Room
Dark Room
Interactive light and sound room
Colour room
Visual Assessment Room
Mobile Sensory Unit
Interactive Theme Corridor

Video Clip of interview from SLD : Helen 0.03.49 to 0.05.07

Interview
We were very keen to call it an interactive room; we had a room with similar equipment in our old building and it was a multi-sensory room and we were going to stimulate the students, and we stimulated them to the nth degree, the trouble is that the students weren't aware of what their actions were doing. There was very little connection between "If I press this switch
This will happen and I like it, or if I press this switch, this will happen and I don't like it." And we weren't getting any feedback from the students, so we were very determined from the outset that this room would be educational. We wanted to teach... we wanted to teach the students about cause and effect, about object permanence. We wanted them to have control over their environment and we wanted them to be able to make choices. The equipment that we have put in there is a fun way of doing that. We called it an interactive room and we wanted that put on the door so people knew that. It was a two way process – the room does something and the student does something and they communicate about something – whether they do like it or they don't like it. So it's a two way process between the student and the room.

Physical Environment

What kind of equipment should be included in a multisensory environment?

Images

Case study: SILD 2(stills)

0.00.03 – light sticks
0.04.55 – Fibre optics

Case study: SILD **1**

0.19.44 - Cheryl
Stills from SLD Multisensory Environment (bubble tubes and mirrors)
0.00.02
0.00.20
0.01.06
0.02.02
0.02.53
0.02.58
0.04.21
0.05.16
0.08.49

Text

The kind of equipment included in a multisensory environment will vary according to the aims and objectives identified for the use of a room and the needs of pupils. Equipment, which promotes the active involvement of the learner, is of paramount importance. Light, movement (including vibration) sounds and smells stimuli form the basis of equipment. For instance, interactive bubble tubes give the user intensity of light combined with movement and vibration. Flexibility is important, as is accessibility. Most equipment features a range of control systems but most common is the use of switches. A variety of switches are available which operate on the basis of one or more of the following:

Momentary – equipment operates as long as the switch is pressed
Latched on/off – equipment switches on/off each time a switch is pressed
Timed – equipment switches on for a pre-determined time of your choice
Sequence – equipment is automatically sequenced
Manual sequence – equipment is learner sequenced
All On-All Off equipment switches on or off each time a switch is pressed.

Voiceover

When choosing equipment – think about flexibility. Although it can seem attractive to buy one of the standard sets of equipment available from catalogues you could find that it doesn't give pupils and staff enough scope. Think about the needs of the whole school and plan for diversity. Also allow for different working methods amongst staff and make it clear what has to remain in the multisensory room and what is suitable for classroom use. From the very beginning you will need to make sure that equipment is regularly checked and maintained. Keeping a list of equipment as a sensory bank and using a loan system will help to keep track of equipment and monitor its use across the school. This helps to prevent equipment being neglected and also helps to build up a picture of what kind of equipment pupils and staff prefer. This can be invaluable not only for educational reasons but also to give feedback to fundraisers.

PHYSICAL ENVIRONMENT SECTION

Health & Safety

Ensure the multisensory environment (including ball pools and other equipment) is regularly cleaned and disinfected
Make sure that adequate ventilation is provided at all times
Have electrical and other equipment regularly checked by qualified personnel
Check with your LEA and school medical officer on the policy for the use of ultraviolet light
Never leave learners alone in the multisensory environment
Liase with your named child protection officer to ensure child protection issues
have been fully explored and covered in policy and procedures
Include the multisensory environment in any risk assessment audit

Voiceover

Keeping track of equipment within the school is important to ensure it is regularly inspected and maintained. It's also necessary to have a named contact for all staff in terms of technical support. Some pieces of equipment are more likely to suffer from over vigorous exploration than others. Fibre optics for instance, tend to be attractive to pupils who explore using their mouth. Bubble tubes have added attraction for pupils who like to feel the vibration as well as looking at the visual effects. It is also fairly common for pieces of equipment to be moved around to different sites in the school. Pupils with challenging behaviour may be tempted to throw or mistreat equipment. Manufacturers vary in how much back-up service they offer. Sadly it is all too common to find faulty equipment lying around. This is not only a potential health and safety issue but adds to the difficulties faced by pupils and staff who are relying on a consistent response from a switch only to find it is broken. Or even worse that it works some times and not others.

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