

**LEARNING STYLES IN DEAFBLIND  
CHILDREN: PERSPECTIVES FROM  
PRACTICE**

by

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## **ABSTRACT**

This thesis explores the concept of learning styles as they relate to the education of deafblind children.

A literature review concludes that assessment of learning may be more effective than assessment of skills. The practice of assessment in the UK is researched through the use of a survey of teachers of deafblind learners. This survey indicates that teachers favour informal observational assessments, and that they do not currently assess learning style, and may not know what it is. A second literature review and other arguments show that the concept of learning style is relevant to deafblind learners. A series of case studies of deafblind children is then described. Methods for studying learning styles are developed through these case studies. These methods initially explore the concept of style through prompt modality preference, and then through wider aspects of style. The assessments demonstrate that each child has her own individual learning styles, notwithstanding the shared impairment of deafblindness. The application of learning style preferences to teaching shows some evidence of improved learning. In addition, the outcomes of the studies challenge some accepted pedagogical principles for the education of deafblind children, such as the priority of communication skills above self-help skills.

# Dedication

To my dear friend Annie, with thanks for all the playtimes she spent playing Helen Keller with me in school.

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## Abbreviations

GEST	Grants for Education, Support and Training
PMLD	profound and multiple learning difficulties
QCA	Qualifications and Curriculum Authority
LEA	Local Education Authority
DES	Department of Education and Science
SLD	severe learning difficulties
SEN	Special Educational Needs
LPAD	Learning Potential Assessment Device
TTA	Teacher Training Agency
MQ	Mandatory Qualification
DfES	Department for Education and Skills
FE	Further Education
MSI	multi sensory impairment/multi sensory impaired
HI	hearing impairment/hearing impaired
VI	visual impairment/visually impaired

Assessments described in chapter three (and following)	
Callier Azusa Scale G (Stillman 1978b)	CAG
Callier Azusa Scale H (Stillman & Battle 1985)	CAH
McInnes and Treffry assessment (McInnes & Treffry 1982)	MC&T
Progress Guide for deafblind and severely handicapped children (Dale 1972)	DALE
Affective Communication Assessment (Coupe et al. 1985)	ACA
Pre-verbal communication Schedule (Kiernan & Reid 1987)	PVCS
Functional and Instruction Scheme (Nielsen 1990)	FIS
Behaviour Assessment Battery (Kiernan & Jones, 1977)	BAB
Object related scheme assessment procedure (Coupe & Levy 1985)	OBX.

## Chapter one

### **Introduction**

"Even I have one, PhD. Do you know what that stands for?"

"Doesn't everybody? I have a PhD, too. 'Piled Higher and Deeper' "

"Tell me what you piled higher and deeper."

".....a doctorate from an old and prestigious school - a PhD in education."

"Zebediah! You *wouldn't!*" (I was horrified).

"But I *did*, Deety. To prove that degrees *per se* are worthless. Often they are honorifics of true scientists or learned scholars or inspired teachers. Much more frequently they are false faces for overeducated jackasses."

Robert Heinlein (1980) *The number of the beast* pp 11 & 81

The studies which form the backbone of this thesis arose from some years of personal experience in working with deafblind people, and from my reading and understanding of issues about assessment and cognitive development in people who are deafblind. They grew out of my interest as a practitioner in the achievement of the deafblind people whom I taught. They concern maximising learning opportunities for this population and increasing the tools available to teachers for improving teaching.

In this chapter I will explain the reasons for beginning the studies described in this thesis and give an outline of those studies. I discuss the term 'deafblindness' in relation to the population described in these studies. There is an overview of my approach to research. Following this introduction, I explore literature related to the assessment of deafblind learners, with a particular emphasis on assessment through learning, rather than of the products of learning (Chapter two). This leads on to an investigation of the practice of assessment by teachers of deafblind learners, which I undertook by a survey of experienced and qualified teachers (Chapter three). My interest then focused on one particular aspect of the learning process, that is,

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the concept of learning (cognitive) styles in deafblind children. Learning styles are here described as patterns of preference in learning in individuals who are deafblind. The literature reviewed in Chapter four discusses this concept, particularly in relation to learners with disabilities. This led to a series of child studies, conducted in three phases, which explore the issue of learning style in relation to this population and how this could affect teaching and learning. The methodology for these studies and the pilot study, a broad investigation of the concept of learning style in one child, are described in Chapter five. The second part of the first phase studies, the exploratory studies, focused on one aspect of style, prompt modality preference (Chapter six). The second phase studies developed from these and included investigating how the assessment of learning style could be applied to teaching and learning in the classroom (Chapter seven). The third phase studies widened the focus from prompt modality preference to other aspects of learning style (Chapter eight). Conclusions of the studies and discussion of the issues raised, with implications for theory and practice, and matters for continuing research, are presented in Chapter nine.

### **1.1 Deafblindness**

Deafblindness has predominantly been the interest of a few highly specialist workers in the fields of psychology and education such as Gridley Howe, (USA) Sokolyansky, (USSR) McInnes, (Canada) and van Dijk (Netherlands) (Enerstvedt 1996). It has however been discussed by other authors interested in the formation of the human mind, such as Diderot (1999 first published 1749) and Dickens (undated; original 1842). Others have also written about deafblindness, from the triumphalist approach to Helen Keller's life signified by the title 'The Miracle Worker', of Gibson's play about her (1957), to more modern authors considering deafblindness as an interesting psychological state. The following quotation from the science fiction short story, 'The persistence of vision' by John Varley (1978) well sums up the difficulties in assessment following the rubella epidemic in the USA:

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In the 1970s these five thousand potential Helen Kellers were all six years old. It was quickly seen that there was a shortage of Anne Sullivans. Previously, deaf-blind children could be sent to a small number of special institutions.

It was a problem. Not just anyone can cope with a blind-deaf child. You can't tell them to shut up when they moan, you can't reason with them, tell them that the moaning is driving you crazy. Some parents were driven to nervous breakdowns when they tried to keep their children at home.

Many of the five thousand were badly retarded and virtually impossible to reach even if anyone had been trying. These ended up, for the most part, warehoused in the hundreds of anonymous nursing homes and institutes for "special" children. They were put into beds, cleaned up once a day by a few over-worked nurses, and generally allowed the full blessings of liberty: they were allowed to rot freely in their own dark quiet, private universes. Who can say if it was bad for them? None of them were heard to complain.

**Many children with undamaged brains were shuffled in among the retarded because they were unable to tell anyone that they were in there behind their sightless eyes. They failed the batteries of tactile tests, unaware that their fates hung in the balance when they were asked to fit round pegs into round holes to the ticking of a clock they could not see or hear. As a result they spent the rest of their lives in bed, and none of them complained, either.** To protest, one must be aware of the possibility of something better. It helps to have a language, too.

(pp 140-141) (my emphasis)

My personal experience of someone who may have been able to do something 'better' was emphasised when I met Peggy.

### **1.2 My experience; Peggy**

I had been teaching deafblind people for about four years when I met Peggy. She was lying on the floor, face turned to the light, masturbating. She did nothing else for most of the hour I was there, until someone helped her up, and took her for a shuffling walk to the toilet.

Five weeks later I met her again. She was sitting at a table, doing nothing. She was given a pegboard with large pegs. She did nothing with it. Someone

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took her hands and helped her to feel the large holes, and then took a peg and put it in. Hand over hand, Peggy was shown where the pegs were, and how the pegs fitted in the holes, and how to follow along the line. Initially, she did nothing. Then she threw them. Finally, she started to feel for the holes, and thrust the pegs towards them. Peggy did not complete the pegboard that day.

This visit was related to an assessment, and on the basis of what Peggy did that first day, I believed that Peggy would not be capable of much learning. She showed no inclination for interaction or decision making. She could walk but did not move. I could see the deficiencies of the environment but it still seemed that she was not making any attempts to interest herself in anything. A simple observation of Peggy would have suggested that she could do almost nothing.

When placed in a situation in which learning was required, initially Peggy showed nothing. She was not able to do what she was asked. Her score on any test would have remained nothing, or almost nothing, except that she could sit at a table. Only in a situation in which she *was* learning was any progress seen. Her potential for development had been, and could continue to be, seriously underestimated. Lack of skills was interpreted as lack of cognitive ability; for this reason she was given no opportunity to learn, and she continued to fail to show skills, development, and cognitive ability. I began to see more clearly at this point the risks for this young woman of assumptions being made about ability in deafblind people.

While I was already familiar with a range of tools for assessment of deafblind learners such as those reviewed by Aitken (1995), Peggy showed me that I did not understand enough about effective assessment of deafblind learners. My experience as a teacher of deafblind children indicated that assessments were usually carried out to find out about children's performance. They quantified and detailed skills, rather than investigating problems in learning and proposing changes that would improve teaching and learning for the pupils. Some of these assessments claimed to assist in determining learning



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potential through testing of skills. I knew of no research into how these tools were used or how effective they were, especially in developing learning, and I saw a need for such an investigation.

Peggy's progress in learning when a learning situation was provided and teaching took place showed that learning itself was significant in profitable assessment. The assumption that lack of skills means lack of ability is unreliable for this population. Assessment of learning might assist in the provision of appropriate, effective environments enabling learning despite the adverse circumstances imposed on that learning by dual sensory impairment.

The difficulties of learning incidentally and of following typical learning patterns are well documented for deafblind children (Wolf-Schein 1998, Murdoch 1994a). There is less literature about assessment of development and learning, in particular in relation to the way in which each individual optimally addresses learning situations (what is later here called learning style) through and despite their disabilities. Firstly, then, I needed to discover what is already known about the assessment of deafblind children.

Assessment through learning provoked my interest in learning style, about which I knew nothing in relation to deafblind children. The concept might offer insight into improving learning for individuals for whom learning is likely to be both different and difficult, because of limited hearing and vision. In 1997 when I began the investigation I found only one source which mentioned the term learning style in relation to deafblind learners (Maxson et al. 1993). Most literature on learning style relates to individuals who are able to perform tests or analyse their own responses, and I found no procedures for investigating this in learners with significant disabilities. Current assessment procedures seemed not to address this or to address it only in passing, as in Bond (1986a), and Curtis and Donlon (1985). While proceeding to examine developmental assessment of deafblind learners, my understanding of learning style in these individuals continued to develop.

### **1.3 Personal statement**

The studies described here took place over six years while I was working as an advisory teacher, a school middle manager and then in teacher education in sensory impairment and deafblindness. While studying to become a teacher of children with severe learning difficulties, in the early 1980s, I had met a lecturer who declared that any student, however profound their disability, could achieve anything educationally, *given sufficient time*, through behavioural teaching. Initially my teaching was based on analysing and teaching small stages of desired tasks in structured situations, but later my practice was increasingly influenced by interactionist ideas (for example, Nind & Hewett 1994) concerning the priority and necessity of communication. This appears to have become more important in teaching and teacher education, possibly to the cost of development of self help and daily living skills. This priority for communication may mean that a learner's overall ability is judged on poor communication despite our knowledge of the difficulty some deafblind learners will have (Nafstad & Rødbroe 1999) in acquiring these skills. While I do not believe only time is necessary for learning, I do believe that the potential of learners with severe impairments to progress, given appropriate environments, may have been underestimated.

### **1.4 The development of research questions**

The journey from my initial interests to my research has had wrong turnings, shortcuts, and long waits in traffic! Over its course both the planned route and the destination have altered more than once. The present account of this inquiry is a part of this journey, the description of some significant scenery, some background information and some of the more detailed turnings and directions on the road. My initial thoughts were to examine learning as an indicator of potential or 'intelligence' in people with deafblindness, and to use this as a basis of assessment. However, my increased understanding of assessment and of cognitive skills have changed my opinion about 'learning potential'. I now believe that 'intelligence' is not an innate, predetermined quantity, of which some people have more and others less, rather it is a

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synthetic process of neurology, personality and environment, which can be modified and may change over time (for example Feuerstein et al. 1980, Siegler 1998, Richardson 2000). My concerns as an educator were to examine how assessments were used and how they contributed to effective learning for deafblind children. Therefore, the first questions I brought to the research were:

- What is known about the assessment of deafblind children?
- How valuable is such assessment, particularly in relation to improving teaching and learning?

As I examined these questions, I became increasingly interested in the effect of style on learning performance. For deafblind children it appears that little is known about learning process, and therefore it might be possible, through looking at style, to learn how best to design learning situations. Could deafblind children learn in same way as other children simply through alternate mechanisms as Diderot (1999) asked in 1749 (see heading of Chapter two)? As there seemed no adequate answer, I asked the following questions:

- Is the concept of learning style relevant to deafblind learners?
- If so, is it possible to assess learning style in this population?

For me as an educator this naturally led on to the question:

- Can such an assessment be used to improve teaching and learning?

### **1.4.1 The present studies; further questions.**

The studies described in these pages were intended to investigate these questions systematically, through examination of relevant literature and through study of children and their teachers. These studies themselves raised further questions in relation to the process of such research. The diversity of the children and their learning situations suggested that classic experimental methodologies (Robson 2002) would probably not be appropriate. Other studies (for example Murdoch 2000 and McLinden 2000) demonstrated that

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for children with multiple needs and sensory impairments a series of child studies might be appropriate, individual children being examples to illustrate the investigation. Therefore a further question for investigation was posed:

- Is case study methodology appropriate for studying deafblind children as learners?

The particular situation of deafblind learners and their teachers, as I approached it, raised issues about the ethics of the research. The children studied could not consent to be studied. The small size of the population meant that children and teachers might be easily identified. One further issue the studies addressed was:

- What are the ethical issues for this population and how can they be resolved?

### **1.5 Research framework**

The research conducted throughout the studies described in this thesis was conducted with a flexible design (Robson 2002). This used various types of evidence and various methods of gathering that evidence to explore and attempt to explain the issues under investigation (Denzin & Lincoln 1994 cited in Hitchcock & Hughes 1995). It is a 'disciplined enquiry' (Shulman 1988) in which:

observations are collected, evidence is marshalled, arguments are drawn, and opportunities are afforded for replication, verification and refutation (p 4).

Despite some attempts to divide 'scientific' and 'naturalist' research, or 'qualitative' and 'quantitative' research there is increased recognition that the two methodologies do not need to be opposed (Robson 2002, Gorard 2002a, Tunmer et al. 2003, Scott & Usher 1996). The methods used here however are not primarily those of a traditional 'scientific' approach (Robson 2002). Gorard (undated) says that 'experiments' (where identical groups can be compared through one changing variable) may be seen as the 'gold standard' but he recognises that such experimental designs do not reflect the real world. The population of deafblind children does not easily lend itself to such

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research designs. Murdoch (2000) lists the following problems with studying the group of children with multiple disabilities and sensory impairments (MDSI):

- lack of clarity about who constitutes the population
- the extreme heterogeneity of the population
- the imprecise but very low prevalence of MDSI
- the changing characteristics and needs of the population
- the behavioural noise and inconsistency induced by variable sensory function, epilepsy or unknown factors
- the differences in perceptual framework between subjects and the researcher
- the inability of most of the population to express their opinions verbally or co-operate intentionally with the researcher (p 86).

Even had larger numbers of children been available, and comparative, more experimental, designs possible, I would still have chosen a more descriptive and exploratory design for this inquiry, which develops a new idea in relation to deafblind children (Robson 1993).

A quantitative study is not necessary for disciplined enquiry (Shulman 1988) but as Tunmer et al. (2003) emphasise, 'good science' should underlie all research. They assert that research that does not address a question of interest (have a hypothesis), produce knowledge that others can use (is generalisable) or relate to anything already known (is theory driven) cannot be called research at all. Although this report is primarily descriptive, it does, as Gorard (undated) describes as good practice, use 'numbers' alongside other methods to provide a picture in which at the least, the:

conclusions are appropriate to the level of security of the findings (Gorard 2002b p 9).

However, as a small study, it could add to the potential concerns about educational research becoming 'dominated by reports of small scale local studies'

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(Dyson & Robson 1999 cited in Gorard 2002a), not able to support conclusions or hypotheses outside its own boundary.

This work aims to be a:

systematic study to collect a depth and richness of ideographic data (Pagliano 1999 p 136).

Some parts of the work use methods closer to fixed designs, such as a survey (see chapter three), and others are more ethnographic, collecting a variety of data to explore and interpret a situation (see chapter eight) (Robson 2002, Pagaliano 1999).

This inquiry is an interpretation of an aspect of learning and teaching in deafblind children in the UK. Concepts such as assessment, intelligence and learning style are socially constructed and open to different interpretation. There are no facts waiting to be found; the understandings which underlie this inquiry need to be constructed and shared by the readers (Scott & Usher 1996). As such it reflects Pagliano's (1999) description of qualitative research by being an interpretation of evidence filtered by my personal objectives, outlook and understanding, and as having an:

emergent design shaped by the research process (p 141).

It is not a disinterested search for truths outside the framework of my understanding (Scott & Usher 1996). Overall it produced ideas (and further questions) which arose from my interpretation of what these children and adults actually did and/or said. I approached these questions with an open mind, framing and developing methods as I worked with data and interpreting evidence within my greater understanding of the issues.

### **1.6 Deafblind children; terminology and population**

It is necessary to define the population of deafblind children and the terminology used in the rest of this inquiry because, despite a continuing debate in the field of deafblindness, there is as yet no agreed definition. Education authorities and other services in the UK have no consensus on the nature and intensity of impairments which may be described as constituting

deafblindness, or on what terminology is appropriate to refer to children with these disabilities. Presenting a definition allows readers to understand the nature of this research, and to apply it to other groups. I here discuss the changing nature of the difficulties of children designated as deafblind, the terms currently used, the terms I will use, and the population they describe.

### **1.6.1 Terminology**

In the UK children with dual sensory loss are most commonly referred to as *deafblind* or as *multi-sensory impaired* (for example Etheridge 1995, Aitken 2000, Hills 1995). However other terms are in use. Pupils with these disabilities are also referred to as dual sensory impaired (DOH 2001), multi-sensory deprived (McInnes & Treffry 1982), as having multiple disabilities and sensory impairments (Murdoch 2000), as having profound intellectual disability and additional physical and/or sensory disabilities (Hogg 1991), and as multi-handicapped visually impaired, or multi-handicapped hearing impaired (Bond 1986b, Aitken 1995). The definitions of the terms 'deafblind' and in particular 'multi-sensory impaired' have also been deliberately widened by some services to include children who do not have dual sensory impairments, but may have sensory impairments and other disabilities, including communication difficulty (Etheridge 1995, Waltham Forest 1995). The terms may encompass children whose educational needs are very similar to those of children who have recognised and measured hearing and visual loss, but who have only one sensory impairment accompanied by other difficulties such as physical impairment which may prevent them adequately accessing the environment. Among those who use the terms this way are, for example, Sense (1991) and the Waltham Forest, Essex, Redbridge and Newham GEST (Grants for Education Support and Training) consortium's multi-sensory impairment support service which stated:

Children are dual sensory impaired or deafblind if they have visual and hearing impairment with the possible addition of other handicaps.

Children are multisensory impaired if they have a single or dual sensory impairment plus a significant communication impairment (Waltham Forest 1995 p 241).

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Even where terms are used to refer to children with recognised and measured hearing and visual loss, different definitions are described. For example, the Bradford, Kirklees and Calderdale Consortium (1995) used three categories of impairment for an audit of children for their services:

- 1 Dual sensory impairment
- 2 Deafblind - with a severe loss to both senses
- 3 PMLD with dual sensory impairment.

The children included in category 1 were all those who had visual correction but still had visual problems.

Within category 2 it was agreed to include those children and young people who had no vision but a fluctuating hearing loss or conductive losses which might improve but at present were not remedied. These pupils were not using hearing aids.

With regard to the children in category 3 it is important to note that blind children who had hearing recognition were not included in the audit (p 27).

Other definitions seek to exclude particular groups of children such as those with Down syndrome from the population their services were working with (West Midlands Consortium Report 1995). Some services, particularly those in the USA and Russia, have used medical criteria of visual acuity and hearing loss to contribute to their definitions (Meshcheryakov 1979, Ward & Zambone 1992). Fredericks and Baldwin (1987) argue that it should be the need of children for specialised educational techniques such as enlargement, tactile methods, amplification and alternative communication which should inform the decision making, rather than measurement of their sensory disability.

### **1.6.1.1 Definition for this inquiry**

In the UK currently, there are no absolute measures which define deafness, blindness or deafblindness in education. The DES (Department Of Education



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and Science) policy statement on the education of deafblind children (1989) describes them as:

a heterogeneous group of children who may suffer from various degrees of visual and hearing impairment perhaps combined with learning difficulties and physical disabilities which can cause severe communication, developmental, and educational problems (p 58)

but this has not proved a sufficient definition for provision of services, and many individual definitions have been used, some created for the specific purpose of deciding and delineating the populations which particular services choose to work with (Sense/DfE 1995). Judgement is generally made about the educational rather than the medical impact of the sensory deficits:

the current definitions used in the UK, USA and the Nordic countries... all refer to the need for special teachers and services to overcome the communication, developmental and learning needs (Best 1994 p 3).

In the absence of any agreed definition, I have chosen to use the definition currently used by a specialist teacher service in a south eastern county. It defines a population with impairments of both vision and hearing thus:

### Deafblindness/multisensory impairment

A child who is deafblind has some impairment of both vision and hearing senses, whether organic or perceptual in nature, the combination of which produces significant difficulties beyond those which would ordinarily be expected to result from a single sensory impairment. Few deafblind pupils are totally deaf and blind, most have some residual hearing and/or residual vision. Deafblindness may be congenital, or the result of illness or accident. It may also be a significant aspect of multiple disability.

### Additional information.

Some pupils who are visually impaired or hearing impaired may become deafblind because of a congenital condition (e.g. Usher syndrome) or because of illness or accident.

This definition draws upon the general, though not agreed, understanding of deafblindness in the UK. It allows recognition of dual sensory impairment in those with profound and multiple disabilities (PMLD) where observation shows

visual and auditory responses at a lower level than other stimuli (tactual, olfactory, proprioceptive). It includes children who have cortical visual impairment, whose impairment is 'perceptual in nature'.

This inquiry is concerned with learners who have had unusual learning experience due to sensory impairment from birth or very early childhood, certainly before the acquisition of language. The difficulties concomitant with congenital dual sensory impairment are different from those of the typically developing child who becomes adventitiously deafblind. Typical developmental opportunities are not available to congenitally deafblind children who will have particular difficulties with the development of communication, mobility, and cognitive development. The survey (chapter three) was directed at teachers primarily working with such learners, and thirteen of the children in the child studies were congenitally deafblind. The fourteenth had Usher syndrome with congenital deafness and early onset of visual difficulty.

I shall use the words *deafblind*, *deafblindness* and *dual sensory impaired* and *dual sensory impairments* interchangeably in discussing children who meet these criteria as does the Department of Health's 2001 guidance on deafblindness (DOH 2001). This definition was given to all the teachers with whom I worked. Of course, some of these teachers may have used their own definitions of deafblindness for the learners they worked with, which may not be identical with mine.

### **1.6.2 Change in needs in population**

The recognised population of deafblind children in Great Britain has changed in the last twenty years. Two factors are likely to be responsible for this. The first is the decline in births of children with congenital rubella syndrome who were previously the majority group in the deafblind population (Best C 1986, Best 1994, Sense/DfE 1995, Porter et al. 1997). The second is the recognition of the significance of sensory impairment amongst children with severe and profound intellectual handicaps (Porter et al. 1997, Boothroyd 1997). This recognition is probably at least partly due to the raising of

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awareness in schools and education authorities following the GEST project 1992-95 (Hills 1995). It has been noted that there are far fewer of those children sometimes referred to as 'the classical deafblind' who do not appear to have other difficulties:

the 'Helen Keller' type of child...literate, intelligent and vocal (Best C 1983 p 11).

Children with congenital rubella syndrome may have associated physical, medical and social problems (Tobin & Myers 1978, van Dijk 1982, Best C 1983), but they usually do not have profound intellectual delay and very severe physical difficulties. The population presently identified as deafblind includes many more children with multiple disabilities including epilepsy, serious medical conditions, and physical and movement disorders (Ward & Zambone 1992, Brown 1997, DES 1989). This has significantly changed the overall population of children with dual sensory impairments, so that they are more likely to demonstrate severe multiple needs in addition to sensory difficulties.

It is not known how many deafblind children there are in the country. In 1995 the figure of 1,900 in England was suggested (Hills 1995), and in 1999 the Qualifications and Curriculum Authority (QCA ) estimated a figure of 1.8 per 10,000 (1999). Variations in definition across the country mean that audits of deafblind children are not completely comparable, and so these figures can only be estimates. Deafblindness is, however, a low incidence disability (Etheridge 1995), and the total number of children involved is very small. Audits of deafblind children across the country were initiated as part of the 1992-5 GEST initiative, by the consortia of Local Education Authorities (LEAs) providing services in their areas. In the Derbyshire consortium area (Derbyshire consortium 1995), 156 children deafblind children were reported, that is, four children per 10,000 of the school population. Each consortium included at least three local authorities, and the other five consortia each identified between 60 and 160 deafblind children (Bradford consortium 1995, North East consortium 1995, Islington consortium 1995, Waltham Forest consortium 1995, Warwickshire consortium 1995). Whatever definition is

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used, the total UK population of deafblind children is very small even in comparison to other exceptional groups.

In 1997 when I began the inquiry I was in regular contact through my work with all the deafblind children both attending a specialist centre and in an LEA, and perhaps knew more children even than many other specialist teachers. Nevertheless in September 1998 I was professionally in contact with only 34 children meeting the definition given above. Of these, 14 were excluded by the limiting conditions described in chapter five.

The small population is further complicated by the wide variety of the nature of the children's conditions, sensory and other impairments, ages, and education, among other factors, making direct comparisons impossible. Material relating to one child will not be easily applied to another; data collected will relate to individuals rather than to a group. The child based studies therefore used a case study approach, as described in chapter five. The evidence from these studies may additionally act as illustration for the discussion of broad questions such as whether learning styles exist in deafblind children and whether they can be recognised. It may suggest some further work that could be done in this field.

### **1.6.3 Access and confidentiality**

The children who took part in the inquiry were generally those to whom I had access through my work. The particular issues relating to access to the children who took part in the child studies are discussed in chapter five. The fact that these are children I worked with raised some ethical issues, of which confidentiality is one, and this is also discussed in chapter five. The issues relating to ethics and the teachers who took part in the questionnaire are discussed in chapter three.

## **1.7 Conclusion**

This introduction has described my thinking at the beginning of the present inquiry, and my current involvement with children who are deafblind. Because of the complex nature of the needs of this group, it has explained the

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terminology currently in use and how I have defined it with regard to this inquiry. Some of the significant issues relating to access and confidentiality which are essential for effective and ethical study in this area have also been examined.

This chapter began by describing my personal experiences and growing understanding of issues relating to learning for deafblind children. As a practitioner I sought to gain the best possible results for the children I worked with. Appropriate and effective assessment is a necessary part of this process. The next stage of my inquiry, then, was to explore such assessment, particularly to see how it relates to assessment of learning in deafblind children, and how it might be used to improve teaching and learning for this group. The next chapter describes the exploration of literature concerning assessment.

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### **Educational and developmental assessment of deafblind children; a review of literature**

“For this lack of language there is no communication between us and those born deaf, blind, and mute. They grow, but they remain in a condition of mental imbecility. Perhaps they would have ideas, if we were to communicate with them in a definite and uniform manner from their infancy; for instance, if we were to trace on their hands the same letters that we trace on paper, and always associated the same meaning with them. Is not this language, madam, as good as another?” Denis Diderot, (1999, first published 1749) Letter on the Blind for the Use of them that See p 160.

#### **2.1 Introduction**

My experience had shown me that I did not understand enough about assessment of deafblind children, how this was carried out, and what difficulties there might be. A better understanding of concepts, approaches and materials used in the assessment of deafblind children would be a part of the answer to the research question:

- What is known about the assessment of deafblind children?

This led to a review of literature on developmental assessment and assessment through learning to identify factors which are significant to assessment for this exceptional population. In particular it aimed to discover what assessments are currently available and how successful these might be, and to suggest appropriate directions for further enquiry, specifically on the value of assessment for improving teaching and learning. Ideas and information from this review would inform the process of seeking assessments of learning and learning style in this population. The assessment of learning, through process rather than product of learning, was especially important, as it provided a promising strategy for the particular needs of deafblind children and their teachers.

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This chapter focuses on developmental and educational assessment. Although the assessment of vision and hearing clinically, functionally and educationally is obviously highly significant for these learners (for example Aitken & Buultjens 1992, Murdoch 1994b, BATOD 1997) these aspects are not discussed here. Communication assessment, which is closely allied to learning and development, is however included where appropriate. Because developmental and educational assessments are sometimes considered to measure cognition, or learning, this chapter includes a summary of learning models for deafblind children. Following this, some of the range of assessment tools designed for use with learners who are deafblind is explored. The limitations of assessment tools which measure skills are then described, concluding with different perceptions of intellectual ability, whether this is an inbuilt, static quality, or a developing, dynamic ability. The value of assessment through learning is considered, both generally and then specifically in relation to deafblind children.

### **2.2 Assessment in education**

Assessment is important in the current educational climate in the UK (see for example, Mansell 2004 and Squires 2004). As well as assessment of pupils for managing their learning, measurement of pupil achievement is used to assess school progress, to ensure that the National Curriculum and other initiatives are delivered (Gipps & Stobart 1993), and to contribute to teacher appraisal and management (DfEE 2000). Children who are deafblind will also be assessed as part of these educational requirements. Many however will additionally be considered to have special educational needs, and assessment in relation to placement and programme planning will be required (DfEE 2001). However, there is doubt about the value of such assessments. For example, the establishment of an entry assessment (the baseline) (DfEE 1998) for all children at school entry age has raised questions about the effective assessment of children who do not easily fit into standard measures, and whether such assessment is appropriate for children attending special schools (Lewis et al. 2003).

## **2.3 Assessment of deafblind children**

### **2.3.1 Purposes of assessment for deafblind children**

From 1944 until 1971 children who were then described as severely educational subnormal were not entitled to education. This probably excluded most dual sensory impaired children, who might have appeared not to have the skills required at that time to benefit from school education. Probably, few deafblind children attended school, although there are notable exceptions (Woodford 2000), and some schools for deaf children and others for blind children did offer education. In 1952 the Ministry of Education calculated that there would be:

only four deafblind children in the country capable of being educated  
(Bennet 1987 p 11).

The 1970 education act made the education of all children, whatever their abilities or disabilities the responsibility of the DES and in theory provided school places for all deafblind children (Wyman 1986). In 1989 the DES issued a policy statement on the education of deafblind children which recognised the need for specialist assessment and agreed that some deafblind children may have been wrongly assessed as having severe learning difficulties (SLD). From this time, deafblindness was recognised as a discrete disability and the particular needs of deafblind children in education were recognised.

A statutory assessment precedes a statement of Special Educational Need (SEN) which outlines the educational support a child with deafblindness will need (DfES 2001). Professionals who contribute to this assessment may or may not be specialists in the education of deafblind children. The choice of suitable school places or educational arrangements will often be based on this evidence. As many deafblind children demonstrate few skills as they approach school age, provision for children with SLD is often considered appropriate (Porter et al. 1997, DES 1989). While government policy continues to advocate inclusion (Florian et al. 1998, DfES 2004) research evidence shows this is far from achieved for pupils with complex needs (Male



2001) and the effects that inclusion policy may have if more completely implemented are unclear. There is also no research evidence as to how deafblind children are assessed and how provision is decided, and there is a wide variation in provision and types and levels of support in different education authorities in the country (Boothroyd 1997). A deafblind child's placement in school may depend on the opinions of professionals who, because it is an extremely low incidence disability, as yet know only a little about deafblind children and may never have met a deafblind child before (McInnes 1999a, Wyman 1986). Following placement, further decisions will be made about their education, and some of these may also be based on assessments, for example, what type of communication system to use (such as the Pre-Verbal Communication Schedule, Kiernan & Reid 1987), or whether an intervenor should be provided. Teachers may also carry out assessments in classrooms, to summarise achievements, or to assist in devising appropriate programmes (Aitken 1995, Eyre 2000). Despite the importance of these decisions, there is little research evidence about effective assessment practice with deafblind children.

### **2.3.2 Current practice and value of assessment for deafblind children**

Bryson (1993a) names several reasons why teachers should assess deafblind children:

in order to answer certain questions about the child, usually to evaluate some aspect of development, or to provide evidence which can be used to inform teaching/learning, also to provide evidence and to indicate priorities (p 21).

A number of writers give purposes for assessment, and describe available published tools, checklists and less formal school based assessments. Eyre (2000) says assessment may be for the purpose of gathering as much information as possible, assessing progress, managing a specific problem, for educational reviews, or comparing a child's results to national standards, and Aitken (1995) describes some aims as to: establish a baseline, record change, ascertain teaching steps and suggest learning or curriculum objectives.

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Others describe (Bond 1986a, Aitken 1995) or evaluate (Langley 1986, Hamer 1987) the range of assessments available. This discussion is not derived from evidence, but from the writers' preferences and based on their knowledge. Evaluations of assessment materials are largely written by the authors of these materials, sometimes based on their own experience but without reference to practice from other educators, for example, Rudolph and Collins (1975), McInnes and Treffry (undated), and Wellan and Al-Sabbagh (1994). The written materials provide little evidence about what teachers of deafblind children actually do or use, and what value this might have, although some potential problems are discussed (see below, 2.5.1). They do not discuss how differences in assessment practice relate to teachers' knowledge, training, or experience or to the educational establishment involved. One source of interest is an inquiry into assessment practices for children with PMLD which demonstrates that teachers of these children largely depend on their own informal assessments and do not always record their findings (McNicholas 1998). This study is reviewed in greater depth in chapter three. Bell (1989) describes her doubts that assessment affects deafblind children's education:

Is Gemma Bloggs being treated any differently as a result? Is her routine altered as a result of this frenetic assessment? Is she being handled differently? Does it make any difference to the experiences that are offered? ...Or is it what would have happened anyway? Does assessment really have a purpose beyond being an end in itself?  
(p 9)

Indeed, assessment may actually be creating more confusion and difficulty than lack of assessment.

Since assessment is related to learning, a brief and limited discussion of learning and deafblind children follows, describing various models of learning and how these might be seen to affect firstly learning, and then assessment, of deafblind children.

## **2.4 Deafblind children and learning**

It is not within the scope of this thesis to present a thorough review of literature relating to models of learning, nor of evaluation of these in relation to deafblind children. However, a summary of five models of learning is presented, with some indication of how these relate to learning for deafblind children, and therefore to assessment. These models are chosen because they are particularly relevant to children with complex needs or to learning style.

### **2.4.1 Piaget's model**

Piaget's child development theories primarily describe how children's interaction and activity with objects allows them to move through developmental stages (see for example, Hogg & Sebba 1986 in relation to children with learning difficulties, Small 1990 in relation to typical cognitive development). In Piaget's view the sequence of typical development depends primarily on the existence of a positive environment. Assessment of developmental stage is made by watching a child (or later talking with a child) in interaction with objects. The stages are sequential, the next steps implied by the assessment. For children with sensory impairment, blindness may slow this development (Stephens & Grube 1982), and these children may need additional help, but Arnold (1985a) considers that deaf children can make these discoveries without formal language. In children who are deafblind, typical development is restricted by incomplete perceptions of the world and thus by their limited ability to interact with objects and the world. For Piagetian theorists, children who are not able to learn in this way will be vulnerable to significant developmental delay (Murdoch 1994a, Broesterhuizen 1986).

### **2.4.2 Learning theory**

Learning theory states that the child learns through positive reinforcement of certain behaviours. Reinforcement (either external or internal) encourages the repetition of behaviours which become part of the child's repertoire.

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Various teaching methods such as errorless learning, where a correct performance is prompted until it can be repeated without assistance can assist progress. Correct application of stimulus will allow for the development of response, even in the most delayed learners (see Clements 1987 in relation to learning disability and Blackman 1985 in relation to cognitive development overall). Assessment of learning is by listing current achievements, sometimes dividing tasks into small steps. It might include assessment of successful reinforcers, and next steps which build on previous success and which can be appropriately reinforced. Because there are more limited natural reinforcers for deafblind children, they would not be expected to learn easily or quickly. Implementation of appropriate reward schedules could however improve and speed up their learning.

### **2.4.3 Information processing**

Information processing is more a theory of the construction of the mind (and brain) than of learning, but some authors interested in learning style have based their work on this theory. Information processing postulates that thinking depends on the way information is received (input), the processes of thinking which apply or adapt information, and the effect of memory for storage and retrieval (process). Following this processing, action or response follows (output). Input is primarily based on sensory information, which can then be processed along with remembered facts (see, for example, Siegler 1998 in relation to typical development and Lacey 1996 in relation to PMLD). Implications for assessment include the exploration of appropriate input mechanisms (the use of the senses) and of ability to remember, as well as the complexity of cognitive processing which is used. Since the input mechanisms are not working effectively where the child is deafblind (McInnes & Treffry 1982) the processing will be atypical and the output will be different from that of the typically developing child. Efficient learning will depend on identifying alternative or additional mechanisms which provide effective input to the brain.

### 2.4.4 Vygotsky's model

The work of Vygotsky is currently influential in education for learners with complex needs, in particular his discussion of 'scaffolding', the way in which an adult structures and mediates the learning task, and the role of language as the carrier of thought (see, for example, Addison Stone 1998 relating to learning disabilities, Wood 1998 in relation to cognitive development in general). For Vygotsky assessment is part of this joint process, learning to do together something the child could not do before (Vygotsky 1978). Arnold (1985b) says this requires the deaf child to develop language to develop thought. Feuerstein et al. (1979) discuss 'mediation', as a process by which the world is interpreted for the child by a competent, acculturated adult. This adult will mediate by:

interposing himself between the child and external sources of stimulation, ... by framing, selecting, focusing and feeding back environmental experiences... to produce ... appropriate learning sets and habits (Feuerstein et al. 1979 p 71).

Feuerstein believes that this mediated learning is a more significant factor for success than direct, chance encounters with objects and the environment. In a similar way McInnes and Treffry (1982) describe the significance of the 'intervenor' to interpret and prepare the environment to enable the deafblind child to learn (see also McInnes 1999c and Prickett & Welch 1998).

Meshcheryakov's writing (1979) also demonstrates his belief in the formation of mind through joint activity. This position leads to the conclusion that *with appropriate assistance*, the deafblind child could learn effectively.

### 2.4.5 Dynamic systems

The dynamic systems approach describes complex interactions between the individual and the environment. The individual response to genetic background, ability, environment and other factors will create unique opportunities for development and learning (for example, Richardson 2000). An appropriately managed environment could create good opportunities for learning even if there are deficits in other aspects of the system. Assessment would therefore necessarily include the systems affecting learning, including

environment, experience, and abilities and impairments (Murdoch 1997, Aitken 1995). Dual sensory impairment would affect the interaction so that unusual development might be expected to result, but would not prevent learning.

### **2.4.6 Deafblindness and development**

These five models each illustrate some aspects of a child's learning and while some may see them as absolute and exclusive they may also operate complementarily. All indicate that development in a dual sensory impaired child will not follow a typical pattern. In some cases it will appear to be slower, and in others, different. Fox (1983) describes how the deafblind child is:

not simply an infant who cannot see or hear (his emphasis)

but:

an organism whose whole experience is distorted (p 60).

Deafblindness however is also heterogeneous, and deafblind children will not benefit from being defined by their sensory impairments alone. Some, despite sensory impairments, function at or near typical age levels and others function significantly below what is typical and have multiple disabilities. Levels of vision and hearing vary, and have varying effects on the learning process. Assessment of learning will be complex and multi-faceted for these learners.

## **2.5 Assessment tools for deafblind learners**

There is a wide, perhaps dizzying, variety and range of published and other written assessment documents (instruments), of styles (formal, informal and combinations of both), and of approaches and techniques (observations, performance tests, interviews) suggested for assessment of deafblind children. Some, such as the Callier Azusa scales (G and H) (Stillman 1978b, Stillman & Battle 1985) are designed specifically for children who are deafblind. That no single assessment meets all needs is attested by the number of materials described by authors in relation to deafblind learners. Langley (1986) lists 19, Bond (1986a) names 36, Hamer (1987) describes ten,

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and Best (1985) mentions 11 all for use with deafblind or multiply impaired individuals. Some of these assessments were designed primarily for people with hearing impairment, visual impairment, multiple disability or severe learning difficulties. The diversity of the population makes assessment difficult. Aitken (1995) lists 16 assessments to show how different 'types' of deafblind children are frequently assessed by different procedures. Schools and services also create assessments for their own use; the Attainment Profile of the Royal School for Deaf Children, Margate (1996) is an example. Other scales have been adapted or annotated to make them suitable for deafblind children, for example, the Developmental Assessment and Screening Inventory by Langley and DuBose (1979, cited in Langley 1986), or the Toy Test, by Wellan and Al Sabbagh (1993). This multiplicity of assessment tools may relate to the perceived difficulty of assessing deafblind children and the perceived inadequacy of some tools for this purpose.

In the UK in the 1980s assessments which included teaching guidance, such as The Next Step on the Ladder (Simon 1984) and Steps to Independence (Best 1987) were produced (Aitken 1995), perhaps because at this time specialist teacher education was not available here. But such material may not be adequate for both purposes, and may compromise the usefulness of assessment by encouraging teaching to assessment, as is implied by Rudolph and Collins in the foreword to their assessment (1975) specifically stating that it was:

not intended to be a curriculum guide... [but an] instrument for measuring the progress of children (p 3).

As the educational climate changed to regard all children, despite disability, as potential learners, so the focus shifted from predictive lists to measures of functional behaviour related to typical life activities (Hamer 1987).

Communication began to be seen as a fundamental to learning (Siegel Causey & Downing 1987, Geenens 1999), possibly partly as a response to the change in population of deafblind pupils. Assessments focusing on symbolic and presymbolic communication skills were developed in both North

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America and the UK, including both the Callier Azusa scale H (Stillman & Battle 1985), focused entirely on communication, and The Schedule of Communication Development (Best et al. 1979).

All these assessments however, are fundamentally lists of skills and achievements and are based on the developmental progress of typical children. Specific exemptions for lack of hearing or vision are sometimes given, as in the Callier Azusa scale G (Stillman 1978b). But there are no references to developmental sequences in *deafblind children*, given that models of typical child development, as described above in 2.4., indicate that these may be significantly different for children with dual sensory impairments. This is discussed further in 2.5.1.1. Some assessments relate specifically to the needs and abilities of deafblind children. Tobin and Myers (1978) present an assessment based on sequencing and memory which they consider to be linked to success in fingerspelling as well as attention and concentration. They believe this might also predict overall achievement. Rowland and Schweigert (2001) describe the manipulation of objects as especially relevant to the deafblind child in understanding other domains of learning, and describe assessment tools for examining interactions with objects in the environment which allow the child to demonstrate skills. The screening tests for visually impaired infants (Friedman & Chen undated) and the Object Related Scheme Assessment Procedure (Coupe & Levy 1985) also use object manipulation and activity to assess learning and are useful for deafblind children. More recent developments in person centred planning are perhaps leading to a child focused approach, such as used by Nelson and van Dijk, (undated), which begins with what the child can do, and focuses on individual development rather than a sequence of skills.

While there are a great number of assessment tools described, there is little evidence, and still less published research, on how these tools are used and their effectiveness for the practitioner. Some may be of more interest to researchers than classroom teachers. As lists of skills, they do not always sufficiently describe the importance of the appropriate assessment settings and the specialist knowledge required by assessors for this particular group of



children (McInnes & Treffry 1982). Sufficient information about purpose and interpretation in relation to ability or progress is not always given and some assessors who use them may understand very little about deafblind children, and will not interpret assessments appropriately. In fact, as described below, deafblind children may not acquire the same skills as other children, or in the same order. It appears therefore that despite, or because of, the number of assessments, these may not meet the needs of teachers.

### **2.5.1 Issues with assessment tools for deafblind learners**

#### **2.5.1.1 Developmental sequences in deafblind children**

Some authors themselves acknowledge that there is insufficient knowledge about the possible *difference* in the development of deafblind children.

Stillman says of the Callier Azusa scale (G, 1978a):

use of developmental checklists to measure progress in deaf-blind children assumes that both the deaf-blind and normal child develop according to the same sequence. At present, there are insufficient data to confirm or refute this assumption (p 3).

Fraiberg (1977) describes different behaviours, a different sequence and different age norms shown by typically developing blind children as compared with sighted children. Although both Rudolph and Collins (1975) and Stillman (1978a) claim their sequences are based on the development of deafblind children they have worked with, as Broesterhuizen (1986) suggests about a sequence she describes for imitation:

research should show if these levels are placed in the right order, and if it is possible to place them in one order (p 9)

but research has not yet been done, and as shown below, probably is not possible. Some children achieve extremely scattered profiles of achievement on these measures, which indicates the equivalencies may not be accurate (Langley 1986). Rudolph and Collins (1975) suggest that most children will 'exhibit variance' from the sequence they use. Lubovsky (1989) supports this by saying that:

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In fact the developmental paths of deafblind people are varied, and it is difficult to compare the stages between each one, even more so to relate these to stages in a sighted hearing person (p 77) <sup>1</sup>

Fox (1983) disdains altogether a developmental approach, showing that the notion of milestones may be inappropriate for children with dual sensory impairments, that their development may be 'qualitatively different', their developmental route 'cross country' (p 57, 67). Fox (1983) asserts that not all steps are developmentally necessary; crawling, for example, is not required for walking.

The difficulty is illustrated by an attempt to revise an already well known assessment instrument for people with learning disabilities (Assessment of Developmental Levels by Observation, Wolf-Schein 1993) for use with deafblind people. Educators with experience with deafblind learners were asked to exclude inappropriate items, change wordings, and add items to this existing test, but the fact that the development of deafblind children may be fundamentally different to that of children with typical sensory perception was apparently not recognised (Wolf-Schein 1996). As Wolf-Schein herself (1998) suggests, assessments designed for children with a single impairment of distance senses usually depend on the other sense, and so are not 'halfway' to an appropriate assessment for a deafblind child, but are at least equally inadequate.

Where splinter skills, a child achieving more in one area than overall, are seen, they are sometimes considered aberrant, but Feuerstein et al. (1979) writing about children with developmental difficulties, propose they should be considered instead as an indication of what the child *can* learn with appropriate teaching. They may relate to behaviours not recognised as functional to sighted hearing people. Activities may have completely different properties for the child who is deafblind. A task such as pattern or figure matching is visually wholistic but tactually analytic, and these different

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<sup>1</sup> my translation

processing functions may occur in different places in the brain (van Dijk 1988). Translation of assessment items into different formats will wreck standardisation, but could also lead to poor interpretation. Best (1994), Murdoch (1994a and 1997) and Meshcheryakov (1979) argue that some achievements of deafblind children will not be recognised; as Best says:

assessment over time requires ... working from the principle of functional equivalence – that is, in the presence of sensory impairments, different behaviours can have identical meaning and identical behaviour can have different meaning (1994 p 4)

Such adaptive behaviours are likely to be highly individual, and although they may reflect the same learning and development as another behaviour in a sighted hearing child, will not be mentioned in assessment tools. Murdoch (1994a) describes a child who threaded toys onto his arm so as not to lose them. Different items in assessments and checklists and different components within items may be required for deafblind children (Murdoch 1994a). For such children, most assessments may only list what the child cannot yet do (Murdoch 1994a, Langley 1986, van Dijk 1982, Eyre 2000).

### **2.5.1.2 Skill acquisition in deafblind children**

While some deafblind children may have gained alternative skills which are not recognised, others may have gained few skills of any kind. The difficulties in learning due to the atypical interaction with the environment may mean that the deafblind child acquires few skills assessable by any developmental tool, whether written for deafblind children or not (Murdoch 1994a, Broesterhuizen 1986). Difficulty in access to the physical and sensory environment may also mean that deafblind children are understimulated (Wellan & Al Sabbagh 1994), and those children with additional physical disabilities are especially at risk (Southall 1987). Deafblind children are vulnerable to misidentification as having learning disability because of slow acquisition of skills, whether or not this is due to additional brain damage (McInnes 1999a). Murdoch (1994a) and McInnes and Treffry (1982) among others consider that the assessment of acquired skills may yield unreliable evidence of ability. Published assessment tools may not enable the assessor to gather enough significant

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information about the child. Because lack of skills is not necessarily due to cognitive inefficiency or deficit, assessments of skills may provide a significant underestimate of a child's ability to profit from teaching and learning, and lead to inappropriate decisions about support and education for the individual (Geenens 1999). If the child's major difficulties are misidentified, then the descriptor of learning difficulties may be misused (McInnes & Treffry 1982, Bond 1986a). Vernon and Green (1980) report on cases where deafblind adults, including those previously having advanced education, were misdiagnosed as mentally retarded because correct methods of assessment were not used.

To ensure assessment is meaningful, suitable assessors, environments and activities are essential, along with appropriate communication methods. The assessor should be experienced in working with deafblind children (McInnes & Treffry 1982) but even so, Goode (1994) considers that highly trained professionals such as teachers do not understand the child's behaviours so well as parents or direct care staff, whose assessments are more accurate. Although cognition and communicative ability are closely linked, some writers assume they represent the same abilities (Bennet 1987, Geenens 1999). Communication is particularly vulnerable to delay and difficulty because of deafblindness (Rødbrøe & Souriau 1999) but a deafblind child who has poor communication will not necessarily have overall low ability.

Underestimates of potential can become a self fulfilling prophecy, for if children are not expected to achieve, they will not be given the tools to do so (McInnes 1999a), and may learn helplessness and inactivity instead of intelligent behaviour (Marks 1998). Blake et al. (1990) show that when parents of children with CHARGE syndrome were told that their children might not have learning difficulty, the children's achievements improved significantly. McInnes and Treffry (1982) believe although sensory processing may have been damaged, central processing may not have been affected, and therefore it should not be assumed that the child will have learning disability.

As discussed above, there are circumstances in which educational placement or support may depend on an assessment. Literature shows that it is difficult for assessment to provide accurate predictions about the intelligence, potential, or ability of deafblind children. There is no research evidence which shows how such decisions are made; how the relevant factors, vision, hearing, and perhaps cognitive ability, should be assessed; how research into this difficult problem could be undertaken; or to how to deal with the problems which making no decisions will bring.

### **2.5.1.3 Testing for intelligence**

The use of any test or checklist to gauge developmental level and potential remains complex. While some authors suggest that the Callier Azusa scale (probably scale G, for overall development, Stillman 1978b) is valid and standardised on a deafblind population (van Dijk 1982, Geenens 1999) Langley (1986) refutes this. Stillman (1978a) does not claim it is an intelligence test for deafblind children, but a developmentally based checklist. For many assessments adaptations may be required for materials, scoring, administration, and communication (Bond 1986b) and the functional equivalence of other behaviours to some items should be recognised (Murdoch 1997). Intelligence testing of deafblind children to predict developmental delay may not be useful. Van Dijk describes how, when using the Hiskey Nebraska intelligence test to attempt to identify developmental delay in children with rubella syndrome, those who had both cataracts and deafness were frequently 'untestable' (1982), 'too low functioning to be tested' (p 94). Despite modifications such as taking the test at home, the assessors could not interest some of the children in the test materials, or the children did not use them in ways which could be scored. As outlined above, they may have been trying alternative activities with the items, following a different developmental path (Murdoch 1994a), and what they could do at that time could not be scored. The poor scores of the dual sensory impaired children, against higher scores for other children with rubella syndrome, might be due to ineffective assessment.

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However, other children will have specific brain damage or other additional learning delay which is not due to sensory impairment or its effects.

Meshcheryakov (1979) makes a clear distinction between children who are educable and those who have organic brain damage. Borchgrevink (1994) also argues that a significant number of deafblind children have innate brain damage which causes or exacerbates their learning difficulties.

Assessments designed for deafblind children may be inadequate, as there is no typical sequence for all children with dual sensory impairment, and the adaptive skills shown by an individual may not been listed in the assessment. Deprivation of perception may have delayed acquisition of skills. In fact, in relation to assessment of so-called intelligence in this group, what Robbins (1971) said more than thirty years ago remains true:

no norms, no standardised test of intelligence and no means of assessing cognitive behaviour are available for use with the deafblind (cited in McInnes & Treffry 1982 p 210).

### **2.6 Assessment, teaching and learning**

Both Murdoch (1997) and Meshcheryakov (1979) cite examples of children who, once appropriately educated, increased their skills considerably. As shown in the dynamic systems approach to cognition, it is not only the factors within the child which are significant to learning (Richardson 2000). Aitken (1995) refers to a need for a 'functional' and 'systems sensitive' approach to assessment, where it is not only the learner who is assessed, but also the environment and resources available, and the attitudes and training of staff. A realistic assessment of a child's learning ability cannot be carried out if appropriate strategies, for instance a suitable augmentative communication system implemented over time, have not been available (Murdoch 1997, Aitken 1995). As Wolf-Schein (1998) says:

Until and unless that child has appropriate education you will not know what he or she can do, no matter how often you assess! (p 40).

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Meshcheryakov (1979) describes children with very few skills arriving in a school for deafblind children. Assessment was not based on what they arrived with, but on their progress when provided with an appropriate environment and with learning based in the practical activities of daily living. Lambert (1987) argues that the Soviet view of assessment was different from the British one, based on *learning* rather than on skills.

The two metaphors following illustrate the difference in approach to measuring potential from educators in Eastern European and the West. Wolf-Schein (1998) describes potential as ready formed, waiting to be initiated, with:

an analogy... of a loaded pistol. The bullets are there waiting to be fired... in deaf-blind children the firing may be inadequate or nonexistent. Thus abilities may lay dormant. Given a major, intensive triggering, ... intelligence can be revealed (p 47).

The secret of accurate measurement lies in discovering a quality which already exists. This discovery may lie in finding a way to communicate; 'awakening' the mind to 'the *revelation of language*' (Bakhurst & Padden 1991 p 206, italics in original).

But in Eastern Europe, it is *through* learning that the teacher provides the opportunity for the child to become a cultural, social being, 'to bring that mind into being' (Bakhurst & Padden 1991 p 206). Lambert (1988) reports a conversation with Meshcheryakov where Western thinking was described:

which compared teaching of the deaf-blind with finding the key to a safe - once the safe is opened the riches enclosed are revealed. Meshcheryakov agreed only up to a point. Yes, find the key, he said, open the safe. But when the safe is opened, it is found to be empty (p 136).

Indeed, education must fill it, with:

the patterns of human thought and behaviour in all their rich diversity (Meshcheryakov 1979 p 22).

## **2.7 Assessment through learning for deafblind children**

### **2.7.1 Benefits of dynamic assessment for deafblind learners**

Assessment through learning, or dynamic assessment is a different approach to learning and assessment. Interest and techniques have gradually developed over the last 70 years (Lidz 1987b) and advocates may claim Vygotsky as their 'icon' or 'guru' (Das 1987). Vygotsky's belief that human behaviour is formed through a child working alongside a more competent adult (Vygotsky 1978) led to the understanding that children may differ not only in their independent performance of skills (such as is tested by conventional skills-based assessments), but also in what they can do with adult assistance. This area of supported work is usually called in translation 'the zone of proximal development', that is, the area of competence in which the child will next succeed independently (Vygotsky 1978) and demonstrates another aspect of the child's developmental profile. The process of assessment of and through learning may be called dynamic assessment, although other names have been used (Rutland & Campbell 1996, Ozer & Richardson 1974, Feuerstein et al. 1979). The key feature of these dynamic assessments is called by Elliot et al. (1996):

the notion of the assessor who works alongside the child (p 153).

The term dynamic assessment encompasses a number of techniques and approaches, but in this chapter it is used as a general term where the focus is on the assessment of and within the learning process.

Some authors have investigated dynamic assessment because of doubts about the reliability of traditional psychometric assessment (for example Feuerstein et al. 1979, Budoff 1987, Laughton 1990, Elliot et al. 1996). The importance of assessment of learning, as opposed to what has been learned, was recognised by Vernon (1969 cited in Feuerstein et al. 1979):

it is indeed curious that we use intelligence tests mainly to predict capacity for learning, and yet none of our tests involve any learning, instead they give us a cross section of what has been learned (p 106).



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As shown above, the conventional assessment of acquired skills is particularly likely to be a poor indicator of ability in deafblind people, and assessment through learning may be a more valuable tool. In particular in an educational climate focusing on inclusion rather than selection on abilities, assessment of and through learning may assist a school in providing for an individual (Lidz 1992).

Minick (1987) describes two theoretical approaches to dynamic assessment, a quantitative and a qualitative method.

The quantitative methods describe a range of approaches such as a test-teach-test method (for example Laughton 1990) or counting the hints given (for example Brown & Ferrara 1985) or measuring how well children use instruction (for example Budoff 1987). These add an additional measure or score to intelligence testing (Campione & Brown 1987, Rutland & Campbell 1996). While the potential for work with children at early stages is recognised, Brown and Ferrara consider that they could not be used alongside other intelligence testing because of the discontinuity in the mental processing tapped by such tests at different ages (1985). These methods are not widely used with children with severe learning disability, although Rutland and Campbell (1996) describe the use of a hints procedure, to provide additional information about children's ability and possibly about how best to teach them. Since these approaches yield scores and measures, as formal tests, they may not be very reliable for deafblind children, for the reasons described above in 2.5.1. No description of the use of such assessment with deafblind children was found.

### **2.7.2 Qualitative approaches to assessment through learning**

Qualitative methods, which emphasise the encouragement of cognitive development, enabling more efficiency in learning, are more likely to be of benefit to deafblind children, and Minick (1987) argues that Vygotsky's own approach was on the development of learning through interaction, not on scoring the child's assisted performance.

### **2.7.2.1 Feuerstein and the Learning Potential Assessment Device**

Feuerstein's concern is to teach successful strategies and raise achievement rather than to measure success or failure; not to measure performance, but to improve it. This includes overcoming cognitive inefficiencies, such as impulsive behaviour, and replacing them with more efficient means of working, such as reflection. Modality of input is considered one of the significant factors which may increase successful learning (Feuerstein et al. 1979). Feuerstein used assessors working alongside children who had failed in the classroom, to provide any help they required, not only pre-defined prompts. In his work on the Learning Potential Assessment Device (LPAD) (Feuerstein et al. 1979) he showed how the child's approach to learning could be modified, overcoming low expectations, and possibly uncovering previously unseen ability. The assessor provides what Feuerstein calls a 'mediated learning experience', a typical learning situation, in which a competent adults leads a child into the culture and knowledge of his society:

by framing, selecting, focusing, and feeding back environmental experiences in such a way as to produce in him appropriate learning sets and habits (1979 p 71).

As part of the process, Feuerstein recognises the need for assessment of the child's style of learning:

not only is the purpose of the assessment to evaluate the individual's ability to learn, but it is also designed to yield information regarding the manner and modality through which learning is best achieved (et al. 1979 p 100).

The approach was originally applied to learners at formal levels, but was later applied to learners with significant disabilities (Feuerstein et al. 1988).

### **2.7.2.2 Ozer and Diagnostic Evaluation**

Ozer and his colleagues at the Washington Children's Hospital (Ozer et al. 1970, Ozer & Richardson 1974, Ozer 1978) aimed to identify minimal brain dysfunction in children with learning problems. This evolved into a process called 'diagnostic evaluation' where evidence was gathered about individual

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learning to be used for educational planning (Ozer et al. 1978). The focus was not on testing, but:

rather a statement is derived as to which strategies seem to work (Ozer et al. 1978 p 89).

The procedure included work on various classroom-type tasks and discussion with parents (Ozer et al. 1970) and teachers (Ozer 1978) to identify and evaluate successful strategies. The assessment included the way the task was divided up over time, the child's ability to work with competing stimuli and the sensory modality which the child used most successfully. The authors also recognise that parents and teachers might need help in applying the child's preferred learning strategies to a task; for example, how they could use tactile senses (Ozer et al. 1970). In contrast to Feuerstein's stated intention to improve the child's mental processing, diagnostic evaluation is intended to lead to changes not primarily in the child, but in the learning environment in which the child works (Ozer et al. 1970, Ozer 1978), to provide conditions in which the child could succeed. Other writers also recognise the value of using dynamic assessments to identify the best learning situation for an individual (Mearig 1987, Laughton 1990).

### **2.7.3 Uses of assessment through learning with deafblind children**

As described above learning is both difficult and different for the deafblind child. Assessment through judging the products of learning may show they have made little progress and imply they have little potential (see Stringer et al. 1997). Mediated learning, the supportive, scaffolded learning described by Vygotsky (1978) and Feuerstein et al. (1979) may have been inaccessible, because the parents did not recognise the child's responses, and the child could not access the parents' communication (compare Fraiberg 1977). The opportunity to learn daily life activities, with appropriate structured support, and to be assessed on the process of learning, is rich in potential for the deafblind child (compare also Keane 1987). Arnold (1985b) suggests that the deaf child may have a wider zone of proximal development than the typical

child. The deafblind child's zone may be wider still. She may need initially to have successful learning experiences in order to create the mental structure for learning (Elliot et al. 1996).

In general the dynamic assessment procedures researched have been applied to children with no particular learning difficulty or, where there is learning difficulty, to those with language competency who are able to complete performance tests (e.g. Laughton 1990, Mearig 1987). Although the possible benefits of this approach to more disabled children have been recognised (Laughton 1990, Mearig 1987, Lidz & Thomas 1987, Rutland & Campbell 1996) some of these authors have suggested that a certain degree of metacognitive skills, and therefore of intellectual ability, is necessary to profit from it (Das 1987, Lidz 1987a, Lidz & Thomas 1987). There is little written about dynamic assessment for visually impaired or deafblind children. For deafblind children, it is certainly highly questionable whether a standardised approach (so having measured validity and reliability) would have any value. For visually impaired people, some have provided alternative sensory input for the same procedure, using materials minimally altered to provide access (for example, Gouzman 1996), but the near instantaneous simultaneous perception of the sighted learner does not necessarily tap the same cognitive processes as the successive processing of tactile perception (van Dijk 1988). Vygotsky himself says:

the fingers will never teach a blind person to actually see.... the functions of the sensory organs are not transferable from one organ to another (1993 p 99<sup>2</sup>).

### **2.7.3.1 Some procedures for assessment through learning for deafblind children**

There are no specific recognised or published tools for assessment through learning in deafblind children, but there are descriptions of similar approaches. Wellan and Al Sabbagh (1994) describe the Object-Toy Related Procedure,

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<sup>2</sup> Vygotsky cites two authors for whom references have not been traced by the editors of this work. They are Lusardi and E. Binder.

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what they call a teach-practice-test procedure using toys for deafblind children. It is described as taken from 'existing test materials' with 'suitable items chosen'. The child first demonstrates her current activity with toys, while observed against a schedule of items, and then is given training in the 'correct' response before testing is carried out. It is not clear how results may have been interpreted, or what benefits to assessment, or to teaching and learning might proceed from the test.

Broesterhuizen (1986) describes a programme of observation of a deafblind child in three phases, where the adult first demonstrated materials, then allowed the child to use them independently, then directed the child. She argues that such process-oriented methods are more likely to be fruitful for assessing deafblind children. But the scores and scale ratings she recommends may be subject to the same disadvantages as more traditional testing.

In Russia, alongside other tests, assessors in research and in practice worked through learning situations to see how the child:

- contacted the adult
- carried out instructions
- responded to praise
- used the help of the assessor
- controlled her activity (all in Bertyn' & Pevzner 1986 cited in Lambert 1987)
- related to adults
- reacted to the new environment
- handled the objects given, exploring, discriminating and recognising them (all in Hodges 1994)

Focus on the learning process and not only on previously acquired skills may reflect the different viewpoint of Eastern European educators, allowing learning in a new situation to be the most important indicator of ability.

### **2.7.4 Assessment through education**

Meshcheryakov (1979) asserts that where there is complex disability, it is very difficult to make decisions about the course of development. He explains that a deafblind child should only be considered 'ineducable' (translation of his term) after:

a serious attempt to teach him. A period of trial teaching reveals a child's educability far more decisively than any short examination (p 76).

This period, in his opinion, should be of at least a year's duration. He advocates a programme beginning with social daily activity: dressing, eating and using the toilet, skills which are not usually considered part of cognitive development in the UK. For Meshcheryakov, the child's ability to acquire these skills justifies her continuing education, and the teaching and learning constitute assessment. However in the UK children, in particular in special schools, may spend a long time in what may be called assessment placements. How these placements provide assessment activities, however, and how they record them is less clear. Hogg (1991) describes how, for pupils with PMLD:

it is still not unusual to visit schools in which no developmental or psychological assessment has ever been undertaken and in which teachers confuse the important activity of their 'getting to know' a person with the activity of such assessment (p 168).

Such assessment, he suggests, is unlikely to have sufficient rigour to provide good information for placement or improving teaching and learning.

Children's particular needs and patterns of learning are also addressed by literature on assessment through learning. Curtis and Donlon (1985) describe using video observation schedules with deafblind children to record this, Langley (1986) discusses identifying the best learning situations for visually impaired learners, and Bond (1986b) describes assessing certain behaviours in learning situations of deaf individuals with additional disabilities. (This work is reviewed in Chapter four).

## **2.8 Conclusions**

This chapter aimed to answer the question:

- What is known about assessment for deafblind children?

First, models of learning in deafblind children were briefly described. These models present different pictures of cognitive development. They suggest that deafblindness will affect learning, but that alternative means of learning can be found. However, this affect on learning makes assessment via typical means hazardous.

There is significant doubt shown in literature about the value of conventional assessments of deafblind children. Deafblindness can delay the acquisition of skills, or alternative, atypical, skills may appear. The skills and the sequence of skills presented in testing may be inadequate for assessing the abilities of the deafblind child. Underestimates of ability may result, low expectations may lead to low achievement, and possibly to measurement of low ability.

Assessment through learning may offer substantial benefits for children who are deafblind. These children may not have had effective supported learning experiences and they are likely to need highly individual delivery of educational programmes to maximise their strengths and minimise their difficulties. Information about successful learning may also allow teaching techniques to be improved and thus learning to be increased. The literature review also developed my interest in examining successful learning to create good learning environments, and in the concept of learning style, although as yet I had no clear idea what this might be.

My initial interest in effective assessment, and my experience with Peggy (1.2) had led to an exploration of assessment in deafblind children. This exploration showed that assessment may not always be a good reflection of the child's ability to learn. This chapter has shown that despite the range of tools and approaches to the assessment of deafblind children, these may not be adequate for understanding learning ability in these children. However, assessment of and through learning may be a useful approach, although it is

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not developed by authors in the field of deafblindness. The literature review gave me a wider understanding of what was currently written about assessment of deafblind learners. However, it did not provide any information about how teachers of deafblind children in the UK actually assess those children, what assessments they might use, how useful these might be. To supplement the question:

- what is known about the assessment of deafblind children?

I needed to investigate further to discover what good practice in assessment of deafblind children in the UK currently is. This investigation would seek evidence from teachers of deafblind children, identify the sorts of assessment practice they used, how useful they felt these to be, and how their education and work affected their use of assessments. The process of undertaking such an investigation is described in Chapter three.



## Chapter three

### **An investigation into the practice of assessment by teachers of deafblind learners**

“It proves that she is not like the others; some might say that in that case, she has no business being here at all, because her life and her dreams are not typical but unique. In answer to that, I would say that averages are only ever representative when they appear in statistics. What I, on the other hand, have to look for here is whatever it is that makes the common factors *visible*” Peter Hoeg (1995) *A History of Danish Dreams* p 141

#### **3.1 Introduction**

My starting point of concern about assessment and learning in relation to deafblind children had led to a review of literature about assessment for these children. I had part of an answer to the question:

- What is known about the assessment of deafblind children?

Despite the number of assessment tools and approaches, there were significant limitations in regard to conventional assessment of deafblind learners shown in literature. It highlighted the potential value of assessment through learning. Lambert (1987) and Maxson et al. (1993) agreed that there was neither recognition of the child’s ability to learn, nor systematic means of enquiring into how the child learns best in current assessment practice.

However, there was no literature which showed what assessment approaches were used in the classroom, evaluated the value of such assessments, or showed how they contributed to the improvement of teaching and learning.

The second of my initial questions:

- How valuable is such assessment, particularly in relation to improving teaching and learning?

had not been answered by this review.

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There was little or no evidence of the practitioners' perspective on assessment, what was used, what was seen to be useful, and how teachers actually assessed the pupils they worked with. There was no information as to how teachers learnt about assessments or how effective teacher training was in this area. This chapter therefore describes a survey which aimed to gain a fuller picture of assessment, and of how practitioners understood and used assessments with deafblind learners<sup>1</sup>. The survey focused on good practice, working with specialist teachers with experience and education in the field of deafblindness. It examined firstly how assessment is used with this population, and the purposes, practices and outcomes of such assessment; and secondly, it provided an opportunity to discover whether teachers are currently assessing learning style, and if they are not, to consider what type of assessments might provide a model for such an assessment.

### **3.1.1 The current investigation**

Three strands of evidence provide a background for gathering and analysing the data in the survey. These sources, (with different values and purposes) were:

- the knowledge and skills in assessment required by the Teacher Training Agency (TTA), and those taught by the major teacher training programmes, for teachers of deafblind children (TTA 1999)
- a research study on assessment practice for pupils with PMLD, for comparison with that relating to deafblind learners (McNicholas 1998)
- anecdotal information from my own practice regarding specific situations.

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<sup>1</sup> In this chapter, the word learners is used instead of children or pupils, except where documents or individuals refer to children/pupils. As explained further on in the chapter, some of the respondents to the questionnaire worked in further education, with congenitally deafblind people at early stages of development, but these people are not children. To encompass these people and their teachers throughout this chapter, I have used the phrase deafblind learners. The other chapters of the thesis do focus on deafblind children and schools, and the term children is used in these chapters.

### **3.1.2 Evidence relating to teacher education**

#### **3.1.2.1 The Teacher Training Agency standards**

Assessment is an important part of teacher education for those who work with pupils with SEN. In 1999 the TTA produced national standards in knowledge, understanding and skills for teachers of these pupils, including specialist standards for teachers of deafblind pupils. Teachers are expected to be able to choose and use appropriate assessment tools, methods and techniques, including specialist approaches, record information, share information with other professionals, and use it for planning. They should also be able to assess communication (TTA 1999).

In particular teachers of deafblind pupils should know and understand:

the importance of assessing how pupils process auditory and visual information (p 19)

and demonstrate their skills through:

the sensitive use of appropriate assessment methods such as the focused use of observation, supported by developmental scales and skills checklists (p 25).

They should be able to use other professionals' assessment information to assist in sensory assessment.

They are expected to use:

informal and formal procedures for assessing pupils' communication skills, including for pupils at the very earliest stages of communication (p 15)

and demonstrate skills in:

assessing functional hearing, vision, communication and general development (p 17)

(TTA 1999).

Similar (but not identical) competencies were recommended by SENTC (Special Education Needs Training Consortium) in 1996 and teachers who qualified still earlier would probably also be expected to have such skills.

### **3.1.2.2 Evidence from mandatory qualification programmes**

I contacted tutors on the two programmes currently recognised by the DfES (Department for Education and Skills) as leading to a mandatory qualification (MQ) in teaching deafblind pupils, at the University of Birmingham, and at Kingston University with Whitefield Schools. The tutors told me both programmes have learning outcomes relating to assessment. Both include taught material on assessment, in directly taught sessions or written material (for the University of Birmingham, the specially written text 'Developmental Assessment' (Clark, 2000)). Both include developmental, communication and sensory assessment. Students in both settings complete written work relating to assessment, including practical work and intervention based on assessment. Teaching placement work includes appropriate use of assessments. Neither programme includes assessment of learning style.

The information on the programmes was provided by programme tutors at both establishments in 2000.

Those with a specialist qualification in deafblindness would therefore be expected to have a working knowledge of assessment techniques and instruments and to use them effectively in their practice

### **3.1.3 Evidence from other research**

McNicholas (1998) carried out an extensive investigation through a survey and observation in schools of assessment for pupils with PMLD. While this group is not identical with that of pupils with deafblindness, for many deafblind pupils as described in chapter one, sensory impairments are an aspect of multiple disability and they may be described as having PMLD. The teachers described by McNicholas did not have the teacher education specific to teachers of deafblind children, but similarities might be expected as well as differences.

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Among the many significant issues raised by McNicholas, his research concludes that:

Informal, rather than formal, methods were the main vehicle for classroom assessments, and many schools did not have integrated assessment and programme planning systems (McNicholas 2000 p 151).

While many teachers reported that they used their own ideas to carry out personal, continuous, observational assessment because commercial schemes did not usually meet the needs of this client group, he recognises that:

The vast majority of teachers claim to conduct continuous assessment (questionnaire) but HMI (1991) could not find evidence for this, and in more recent research, teachers could not define it (Rouse and Agbenu 1998) (McNicholas 1998 p 277)

This, he claims, could mean that:

The problems with such practices are that teachers begin to rely purely on intuition, some of the vital information fails to get passed on, and accountability is lacking. (McNicholas 1998 p 296)

Rouse and Agbenu also suggest that teachers did not write down the evidence from informal assessment, and that they did not use assessment material to set targets (1998). In seeking for reasons why teachers might not use published schemes, McNicholas states that reasons might include:

- not enough may be known about published materials despite their wide availability and the value placed upon them by some respondents;
- published materials do not adequately support the majority of teachers, in that they do not fit the wide range of pupils' needs (McNicholas 1998 p 96).

Overall he concludes that while teachers are assessing pupils, they are not always using an appropriate breadth of approaches or methods which would allow them to best use the assessment information.

### **3.1.4 Anecdotal evidence**

My experience in schools and classrooms over the last ten years, though gathered unsystematically, is also a valuable source of evidence. In my experience teachers do not often carry out formal assessment, and use the word assessment to mean the interactional feedback from observation within teaching activities. While this has a valuable role, teachers may, as shown above:

confuse the important activity of their 'getting to know' a person with the activity of such an assessment (Hogg 1991 p 168).

In my opinion, assessment implies a structured approach and a method of recording, as Hogg (1991) says:

systematic assessment followed by intervention informed by the outcome of the assessments (p 167).

While teachers may (correctly) believe that no published material will meet the learners' needs (see chapter two, and McNicholas 1998) and not use formal assessment, it may be that informal observation is mistaken for assessment. This may mean that teachers are not, for example, asking the most demanding questions of their practice and of the learners they serve.

### **3.1.5 Conclusions from background information**

Despite the evidence from the TTA requirements and the Universities' specialist programmes, the evidence from McNicholas's research and my own observations in schools suggests that:

- teachers might be using unstructured observation in place of formal assessment techniques without a clear idea of what it was for
- teachers might not know about assessments which were appropriate to deafblind children, either published assessments or assessment techniques
- teachers were not using any assessment of learning style.

The inquiry addressed to teachers was therefore planned for the purpose of discovering more about how teachers actually used assessment in their practice.

### **3.2 Methodology**

This inquiry had a flexible design, with both qualitative and quantitative data sought by the methods used following the framework laid out in 1.5. The purpose of this inquiry was to discover good practice in assessment from teachers with experience and education in working with deafblind learners. The respondents were not intended to be representative of the larger population of teachers who work with deafblind learners.

In chapter one it was established that deafblindness is a low incidence disability and deafblind learners are a heterogeneous group with different needs. Most of them are not taught within establishments for deafblind learners (Boothroyd 1997, Porter et al. 1997). Teachers of deafblind learners are therefore widely scattered and not easily identifiable; in order to reach as many as possible, and without making impossible demands on their time or my resources, I used a postal questionnaire (Moser & Kalton 1971, Mouly 1978). Because formal assessment might be a relatively infrequent event, asking teachers to keep diaries (Robson 2002) would probably have required more input for less result. The focus on assessment might also have influenced teachers' practice so that more assessments might be reported than would otherwise have been done. Research diaries would however provide interesting evidence for further investigation.

#### **3.2.1 Validity and reliability**

Analysis of a questionnaire is based on the assumption that the information provided is broadly accurate and represents the thought of the person who provided it, that is, it is valid, reflecting the situation accurately. All questionnaires are subject to:

wishful thinking, vague recollection and a desire to give the answer the interviewer is believed to be looking for (Moser & Kalton 1971 p 315).

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The design of the questionnaire would be informed by the need to ask uncontroversial questions which did not influence teachers to provide elaboration on the truth. Using a postal survey instead of an interview would allow respondents time to check and think about answers (Moser & Kalton 1971). This enhanced the likely reliability of the survey, that is, that the data would be replicable if the measure were repeated.

### **3.2.1.1 Internal validity**

The design of the questionnaire would also allow for measurements of internal validity, by comparing some responses to others by the same respondent. The effect of mentioning some forms of assessment in the questionnaire on the answers to other questions would need to be considered. At 3.2.5.4 below I discuss the validity and reliability of the results of the questionnaire.

### **3.2.2 Sample**

While the questionnaire was primarily aimed at teachers, other staff who had a significant role in assessment were invited to take part. In the pre-school and further education sectors staff carrying out this work might not be qualified teachers<sup>2</sup>. Deafblind learners are taught in many different schools and served by different services, and there was no clear way of identifying and contacting their teachers. The sample chosen was a purposive sample intending to reach 'information rich' sources (Gall et al. 1996). This group would not be exceptional teachers of deafblind learners, but were unusual because the number of teachers of deafblind learners is small, and therefore they were:

cases that manifest the phenomenon of interest intensely but not extremely (Gall et al. p 232).

The sources to which the questionnaire was directed and the types of questions asked related the inquiry to teachers working with learners who were congenitally deafblind or deafblind from early childhood, as described in 1.6.1.1. Broadly the survey would be descriptive, gathering information about

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<sup>2</sup> All respondents and intended respondents are hence described as teachers in this chapter, whether they held qualified teacher status or not.



the respondents and describing the responses through analysis (Oppenheim 1992). Several ways of contacting this group were considered.

### **3.2.2.1 Survey to local authorities**

While LEAs could have been asked to pass on the questionnaire to relevant teachers, there was no evidence that LEA officers could reliably identify teachers of deafblind learners. If misdirected, both the validity of the responses and the rate of response would suffer. Directed to LEAs it would not have reached important sources such as independent schools, Further Education (FE) establishments and voluntary groups.

### **3.2.2.2 Using an advisory service**

A specific locally accurate picture could have been gained by using a single advisory service for deafblind learners in one LEA. While this could have included teachers in different types of education provision, including pre-school teachers, it would have excluded teachers in FE provision. More significantly, one or two people (for example a particular advisory teacher) could have heavily influenced the policy and practice of other staff in the LEA, and limit the validity of the survey. Policy and practice differ widely from one LEA to the next (Boothroyd 1997).

### **3.2.2.3 Snowball sampling**

As described above, deafblind students are taught in different types of schools and by different services, creating a diverse and scattered population of teachers. The questionnaire was therefore passed on by a snowball method (Robson 2002), asking well informed people to pass it on to others who were working in the field (Gall et al. 1996). Questionnaires might reach individuals more isolated from the field. Respondents were expected to be an interested and experienced group who were able to provide the most valuable data through informed judgement and good practice (Denscombe 1998). Because of experience and qualification, it was considered more likely that they would give meaningful, accurate evidence, since this was a field in which they understood the topics the questionnaire addressed (Gall et al. 1996). The interest of this group enabled questions to be asked which required more

thought, and which were deeper and required more time to answer (Jaeger 1988), and may have meant response rates were higher (Moser & Kalton 1971).

The initial recipients of the questionnaire were the members of a regional support group for teachers of deafblind students, the members of a small team involved in research, all students enrolled on programmes with the bodies awarding mandatory qualifications who attended on a given day and key educators and teacher educators in Scotland. Some of these recipients were in influential positions in the field. The questionnaires were mostly sent, initially, to named individuals (Wellington 2000). The use of the snowball method may also have allowed for a swifter spread of the questionnaire into the population (Denscombe 1998). As well as sharing the specialist interest, I was acquainted with teachers in all three of the initial groups through work or education. 90 questionnaires were given out in this way; most of those who received them had qualified teacher status.

The definition of deafblindness used for the survey was given (see above 1.6.1.1.) and recipients of the letter were asked to respond if they had taught learners who met this definition. The word deafblindness was used throughout<sup>3</sup>, but of course some teachers who responded may have used different definitions.

### **3.2.2.4 Sampling issues**

The sample was not intended to be and cannot be considered representative of all teachers of deafblind learners. Although it is illustrative of what might be considered good practice, the views of two particular groups of the intended recipients (experienced teachers) are not included; firstly those who did not receive a questionnaire, and secondly those who did not respond to the questionnaire.

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<sup>3</sup> The teacher education programmes at both institutions used the word MSI and this is used in relation to these programmes.

## Chapter three

Whilst it is not known who did not receive the questionnaire, this group probably included:

- teachers who had no specialist qualification or involvement in support and training activities. Teachers in SLD schools without specialist training are likely to be a significant proportion of those teaching deafblind children in this country (for example Porter et al. 1997) but were probably underrepresented. Some of these teachers may have been unaware that the pupils they were teaching were deafblind.
- those who are working in a teaching role with deafblind students but are not qualified teachers.
- those outside the South East. Two of the key initial contact groups were based in the South East.

While it is not known why individuals did not respond to the questionnaire, this group may have included:

- teachers who were not able to find the time to fill in the questionnaire, or for whom assessment was not a priority.
- teachers who were not interested in the subject matter of the questionnaire, and whose responses might have reflected the understanding of teachers who had thought less about assessment.
- teachers who do not like filling in questionnaires.

The inherent bias due to non response cannot be quantified but should not be ignored (Denscombe 1998). All the teachers who answered the questionnaire are in fact 'volunteers' (Gall et al. 1996). Volunteers are more likely to be better educated, more intelligent, less conforming, women, and of higher social class, and thus not representative of the sample as a whole (Gall et al. 1996). The sample reached was interested, likely to have specialist knowledge and to have experience in the education of deafblind learners, and therefore able to demonstrate good practice and illustrate the issues discussed (Mouly 1978).

### **3.2.3 Ethical issues**

A letter accompanied the questionnaire explaining that information was sought from those who:

currently teach or support students with dual sensory impairments or have recently done so, and therefore have some responsibility for assessment and follow up

and specifically invited responses from classroom staff who were involved in assessment but were not teachers. The letter is in appendix one. The letter explained that inclusion was entirely by the respondent's choice. Most significantly, the nature of the snowball meant that individuals could maintain their anonymity if they so wished. This was particularly important considering that the professional field of deafblindness is very small, and that some of the teachers receiving the questionnaire worked with me in various roles, and they might not wish me to know their individual responses. I believed that to follow up individuals who did not respond in this small field could have exerted unreasonable pressure, although this limited the sample (Moser & Kalton 1971). Anonymity might also have encouraged more honest responses. As a consequence of this decision, I was able to pass out questionnaires without necessarily needing to know who received them. Each questionnaire returned was numbered, and this number identifies individual quotations in the text below. Some of the data is presented so that specific links between job titles, for example, and teachers' practice, cannot be seen for individuals, thus ensuring individuals could not be linked to their views. No teacher's name was used, nor was necessary for the presentation of the findings of the questionnaire.

#### **3.2.3.1 Responses**

Because of the nature of the snowball sample, it is not possible to know how many questionnaires reached possible respondents, but 63 people returned responses. Two questionnaires were returned by people ineligible for inclusion because they did not currently teach students who met the definition. 61 responses were therefore analysed and the data which follows is based on these 61 responses.

### **3.2.4 Construction of questionnaire**

The investigation was based on a number of hypotheses, generated by classroom experience, knowledge about teacher education and other research. These hypotheses were:

- teachers with specialist teacher education in deafblindness (or in SEN) would have access to more techniques and tools for assessment of deafblind students than those with no specialist experience
- although teachers would know about published assessments (not always specialist ones), they would not use published assessment formats very widely
- target setting would be carried out on the basis of what teachers knew about students, rather than from formal assessment
- the majority of teachers would not have covered the concept of learning styles during teacher education, and would not have carried out an assessment of learning style in deafblind learners.

The questions asked would include:

- what published assessments and assessment techniques teachers knew and where and how they had acquired this knowledge
- what training in assessment was available to teachers, and whether this influenced knowledge about and use of assessment tools and techniques
- teachers' classroom practice in assessment; for example, the methods they used, what assessments were used for and how successful this was
- the use of assessment to examine learning styles in deafblind learners
- teachers' opinions on the value of assessment procedures and results, and their experience in using them.

There were background questions relating to teaching experience and education, especially in relation to deafblind pupils.

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The questionnaire was designed to be as salient and interesting (Gall et al. 1996) as possible for this group of teachers with special interest in the education of deafblind students. Some knowledge of educational assessment was assumed.

Various sources informed the design of the questionnaire including Munn and Drever (1990), Mouly (1978), Hoinville and Jowell (1978), Cohen et al. (2000), McCormick and James (1983), Gall et al. (1996), and Wellington (2000). The following aspects in particular were noted:

- questions were kept as simple as possible
- questions were well spaced, with clear layout
- neither pages nor questions were numbered (to avoid intimidating respondents!)
- straightforward factual questions were asked first, more demanding questions towards the middle, and high interest, more open ended questions towards the end
- the number of open questions was kept as small as possible, considering the likely diversity of the respondents and their possible answers, with a degree of variability kept in almost all questions
- instructions for filling in the questionnaire were simple.

### **3.2.4.1 Types of question**

The questionnaire consisted of thirteen questions of two types, those with closed answers (such as questions one, two and ten) and those requiring narrative and descriptive answers. Open questions, although more difficult to interpret:

probably provide for greater depth of response (Best & Kahn 1986 p 168).

The two types of questions were intended to elicit answers different in tone. The initial questions were classification questions, about individuals' work and training, the next were largely information questions about the types of assessments they knew and used, and these were followed by

opinion/attitude questions, about the significance of certain aspects of assessment.

The information sought by the questionnaire and the answers to the questions it posed are not available elsewhere (Best & Kahn 1986). This is probably the first comprehensive study of assessment practice for teachers of deafblind learners in the UK. A copy of the questionnaire appears as appendix one.

### **3.2.5 Choice of questions**

#### **3.2.5.1 Types of assessment**

I was primarily interested in the assessment of learning and cognition and I deliberately and specifically excluded assessments of vision and hearing in the questionnaire. Without this exclusion I believed that teachers might be more likely to give examples of vision and hearing assessment, possibly medically based, in preference to their own experience of assessment.

#### **3.2.5.2 Inclusion of questions**

Ten assessments were named in the questionnaire to discover what published assessments teachers used and from which sources they had learnt about them. The use of specific names may have prevented, to some extent, a 'pooling of ignorance' (Mouly 1978) if teachers were not able to remember assessments.

These assessments were chosen because:

- all are familiar to me
- all are used with people with deafblindness, five were particularly created for people with deafblindness
- all (save number five) are mentioned in specialist teacher education programmes

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The significance of these assessments is supported by the inclusion of seven in the list provided by Aitken<sup>4</sup> (1995) in his survey of assessment for deafblind children, and two in Pease's (2000) review of communication assessment. The Object Related Scheme Assessment Procedure (Coupe & Levy 1985) was included because it is an assessment through activity based on the use of objects and so is suitable for deafblind learners.

The five assessments which relate particularly to deafblind learners are:

- The Callier Azusa Scale G (Stillman 1978b) abbreviated as CAG
- The Callier Azusa Scale H (Stillman & Battle 1985) abbreviated as CAH
- McInnes and Treffry assessment (McInnes & Treffry 1982) abbreviated as MC&T
- Progress Guide for deafblind and severely handicapped children (Dale 1972) abbreviated as DALE
- Manual for the assessment of a 'deafblind' multiply handicapped child (Rudolph & Collins 1975). This scale was largely included as a test of validity and is not analysed further; see below 3.2.5.4.

Five other assessments useful in working with deafblind learners were named:

- Affective Communication Assessment (Coupe et al. 1985) abbreviated as ACA
- Pre-verbal communication Schedule (Kiernan & Reid 1987) abbreviated as PVCS
- Functional and Instruction Scheme (Nielsen 1990) abbreviated as FIS
- Behaviour Assessment Battery (Kiernan & Jones, 1977) abbreviated as BAB

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<sup>4</sup> Aitken does not distinguish between Callier Azusa scale G, a developmental scale, and scale H, which relates only to communication. My questionnaire did make this distinction.



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- Object related scheme assessment procedure (Coupe & Levy 1985) abbreviated as OBX.

### **3.2.5.3 Pilot for questionnaire**

For this population the target group was already very small and so a wide pilot would limit the group available for the main questionnaire. Two teachers not eligible for the final questionnaire but with recent experience filled in a version of the questionnaire, and discussion with them indicated that the questionnaire was reasonable to fill in. Following this, minor adjustments were made to the text.

### **3.2.5.4 Validity and reliability**

Some measure of internal validity was made possible through arrangement of questions relating to which assessments were known and used.

The Rudolph and Collins (1975) assessment was included because I considered it less likely to be known, and any respondents simply ticking the whole page on which it appeared might be assumed not to have been reading the page.

While the questions were not expected to influence teachers to elaborate the truth, some teachers may have given answers which they considered made them appear better teachers, or they may have been more likely to mention items (for example, names of assessments) named in the text. Individuals' answers also represent different interpretations of questions, and the open nature of some questions naturally led to some different types of information being given by different people. In some cases, respondents may not remember the information accurately and this has influenced the data gathered in unmeasurable ways (Moser & Kalton 1971). It is not possible to know whether respondents answered questions truthfully (McKernan 1996), but the nature of the sample, and the respondents' qualifications and experience make it likely that their intention was to give accurate information as they saw it.

### **3.2.6 Analysis of questionnaire**

#### **3.2.6.1 Validity and reliability**

In most cases respondents answered all questions; where items were left blank these were probably intended as (but not counted as) 'no response', as other answers were given on the same page. It appears therefore that the data is likely to represent what respondents believed to be their practice, which may not, of course, be identical with what they actually did. Individual factors such as memory and preference for key points or long descriptions will have influenced responses. Anonymity and the snowball sample meant that respondents could not be contacted to clear up misunderstandings or to be asked further questions (Moser & Kalton 1971).

No teacher ticked all the responses in question eight, indicating that all teachers who answered this question probably had read the page. While the three assessments most named in response to open questions (PVCS, ACA, Callier Azusa) were also all named in the text, a wide range of other assessments was mentioned by respondents in later questions and some of those named in the question were not frequently mentioned in response to open questions (FIS, DALE).

#### **3.2.6.2 Sample and analysis**

The total number of eligible replies, 61, does not represent all teachers of deafblind learners, but as intended, the group were experienced. For instance, 57 (95%) of the teachers knew at least three of the ten assessments named in question eight. The analysis is broadly qualitative, with some non quantifiable evidence from opinions and comments. Some numerical comparisons were possible for questions such as one, two and ten. Information about both facts and opinions was therefore gathered.

All the answers were read to inform the creation and allocation of categories for analysis (Munn & Drever 1990).

### **3.3 What the questionnaires said**

#### **3.3.1 The respondents**

##### **3.3.1.1 How the respondents were qualified**

The survey reached those who were well educated in this specialist field, as intended. About one fifth of teachers holding MQs in deafblindness by 2000 (22 of 110) and nearly half of those studying for one (20 of 45) were among the respondents. 42 (69%) of the respondents held an MQ or were studying towards one. The good practice of teachers without this qualification was probably not tapped by this study.

##### ***3.3.1.1.1 Roles and work***

Of the 61 respondents the largest group (17) worked in schools for children with SLD and a further eight in schools for children with sensory impairment and learning difficulties. 16 worked in advisory or support roles, and eight in specialist MSI<sup>5</sup> (Multi-Sensory Impairment) classes or units. Six worked in further education. Some worked in more than one setting. The teachers' work roles are shown in table one.

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<sup>5</sup> The term MSI is used here and elsewhere where in this chapter because this is how the teachers described their work.

**TABLE 1 WORK RESPONSIBILITIES OF RESPONDENTS**

Type of setting	Number of teachers n=61
SLD school	17
School, SLD and sensory impairment	8
Advisory/support roles	16
MSI units/classes	8
Further education	6
Other special school	6
Other services/schools	2
Total	63 (some teachers specified more than one setting)
Other special school includes; school for children with physical impairments, school for visually impaired children with multiple needs, and schools with complex intakes of students with SEN. Other includes; specialist SEN nursery, mainstream unit for hearing impaired children.	

56 (92%) had qualified teacher status<sup>6</sup>. Various additional roles were described, including heads and management, advisory teachers, and teachers of the deaf.

51 (84%) respondents had taught more than one deafblind learner in the previous two years. All had taught at least one deafblind learner in the last two years. The respondents as a group had experience in working with deafblind learners, and a variety of learners were likely to be represented.

### **3.3.1.1.2 Specialist education and qualification in teaching pupils with special educational needs**

#### *3.3.1.1.2.1 Qualifications in sensory impairment*

55 (90%) of the respondents described themselves as having or studying for specialist qualifications relating to SEN. Many held more than one qualification. 52 (85%) had advanced study in the field of deafblindness, 42 of these (69%) held or were studying for an MQ for teaching deafblind pupils.

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<sup>6</sup> All respondents are described as teachers in this chapter, whether they were qualified teachers or not.

Some held qualifications in teaching pupils with HI (hearing impairment) or VI (visual impairment). These qualifications are shown in table two.

**TABLE 2**

**QUALIFICATIONS IN RELATION TO SENSORY IMPAIRMENT**

Field of qualification	% of sample with qualification or studying for qualification
MSI qualification	69%
Other sensory impairment qualification (HI or VI)	25%
Other significant training in sensory impairment	16%
No sensory impairment qualification or training	5%

These figures do not add up to 100% as some teachers had more than one qualification.

41 respondents (67%) had specialist training in deafblindness (usually short courses of one or two days) other than or additional to long courses.

*3.3.1.1.2.2 Other specialist qualifications.*

Ten teachers held a qualification in teaching learners with SLD, and 15 other qualifications were mentioned, including general programmes in SEN or psychology, physical impairment, autism, PMLD, dyslexia, and Masters degrees.

**3.3.1.1.3 *Teacher education in assessment.***

Those teachers who *had* specialist training in deafblindness were asked about how this had covered topics on assessment (the question specifically excluded assessment of vision or hearing).

Of 42 people who had or were studying for an MQ, 23 (55%) indicated they had studied assessment, 15 of the 42 (35%) did not provide any information, and four (10%) said they had not studied assessment (or could not remember). Eight people who had other sorts of education said they had studied assessment. Of 29 examples given, 22 mentioned assessment of communication, and six mentioned only this. Other areas mentioned included

mobility, cognition and behaviour. Table three below shows all the areas mentioned three or more times.

**TABLE 3**

**ASSESSMENT TYPES STUDIED DURING TEACHER EDUCATION.**

Type of assessment	No. of times mentioned
Communication	22
General developmental approaches	8
Mobility	9
Cognition/Learning	4
Interaction/intensive interaction	3
Environment	3
Behaviour/challenging behaviour	3

Six people mentioned more than three types of assessment.

Only one person mentioned observation as a topic.

Of course, respondents may not have mentioned everything they remembered.

**3.3.1.2 Summary of roles and qualifications.**

- ❖ 52 (85%) of the teachers had advanced specialist training in deafblindness, 90% a specialist qualification in SEN.
- ❖ 51 respondents (84%) had taught or supported more than one deafblind student within the last two years. Considering the scarcity of such pupils, this demonstrates that they are a group of experienced teachers.
- ❖ 31 respondents (51%) remembered studying assessment of deafblind learners in specialist teacher education in this field. Most of this was related to communication.

The sampling had reached well educated and experienced specialist teachers who would be expected to illustrate good practice.

Most teachers had specialist qualifications in their field, in contrast to McNicholas's survey where 25% had no SEN qualification and only 32% had a qualification in PMLD (McNicholas 2000).

### **3.3.1.3 How teachers learnt about published assessments**

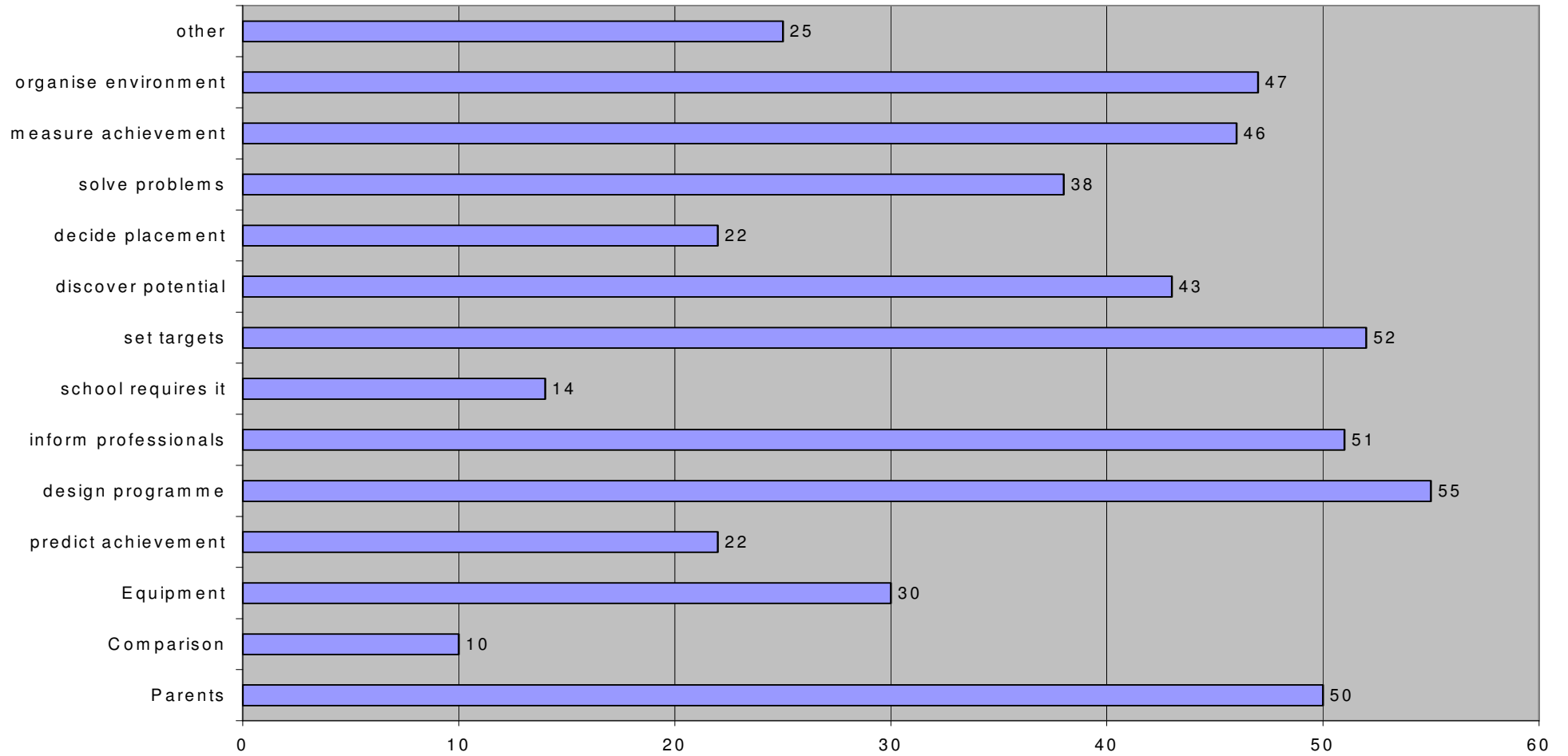
This data relates to whether teacher education had influenced knowledge and use of assessments. Respondents gave information on how they learned of the nine published assessments named in 3.2.5.1. Respondents named six sources:

- ◆ an MSI diploma course
- ◆ other training
- ◆ a colleague
- ◆ their school or workplace
- ◆ reading
- ◆ another source

It is likely that both 'reading' and 'training' include activities undertaken while studying on diploma programmes.

Figure one represents in a graph the sources from which respondents learnt about assessments. Training was the most significant source for knowledge of assessments, in particular the MSI programmes, which were the major source for all but two assessments (the BAB and the ACA). Table four shows that teachers involved in MSI MQ programmes knew more assessments, in particular the specialist assessments for deafblind learners, than those who were not involved.

**Figure five; aims of assessments  
No. of times mentioned as important by respondents**



***Figure one***



**TABLE 4****HOW MSI TRAINING INFLUENCES KNOWLEDGE OF ASSESSMENTS**

How many teachers knew named assessments	Teachers engaged in MQ training n=42		Teachers not engaged in MQ training n=19
Specialist assessments	37 (88%)	<b>CAH</b>	11 (58%)
	34 (81%)	<b>CAG</b>	8 (42%)
	38 (90%)	<b>MC&amp;T</b>	13 (68%)
	16 (38%)	<b>DALE</b>	5 (26%)
Non specialist assessments	40 (95%)	<b>ACA</b>	10 (53%)
	39 (93%)	<b>PVCS</b>	12 (63%)
	19 (45%)	<b>FIS</b>	7 (37%)
	21 (50%)	<b>BAB</b>	8 (42%)
	16 (38%)	<b>OBX</b>	4 (21%)

**3.3.1.4 How useful did teachers find published assessments**

MQ level training also influences the use of published assessments.

Respondents who had MSI MQ training were more likely to have used any one of the named assessments, with the exception of the McInnes and Treffry assessment which was used slightly more by teachers who had not had training. Since trained teachers *knew* more assessments, they would of course be expected to use more; and as table five shows, teachers with MSI MQ training were more likely to use named assessments overall. However, slightly higher percentages of non-specialist staff used MC&T, FIS and ACA than specialist staff. This could be related to their lack of knowledge of alternatives, and the fact that carrying out specialist assessments was an activity on MQ programmes, thus skewing the percentage values. The numbers involved here are small and the figures should not be given too much significance. Table five shows percentages of assessments used by teachers who knew about assessments.

**TABLE 5****HOW MSI TRAINING INFLUENCES USE OF ASSESSMENTS**

	Teachers with MQ training who know and use assessments		Teachers without MQ training who know and use assessments
Specialist assessments	73% (n=37) 68% (n=34) 45% (n=38) 50% (n=16)	<b>CAH</b> <b>CAG</b> <b>MC&amp;T</b> <b>DALE</b>	55% (n=11) 50% (n=8) 46% (n=13) 40% (n=5)
Non specialist assessments	77% (n=40) 90% (n=39) 32% (n=19) 29% (n=21) 38% (n=16)	<b>ACA</b> <b>PVCS</b> <b>FIS</b> <b>BAB</b> <b>OBX</b>	89% (n=10) 83% (n=12) 43% (n=7) 25% (n=8) 25% (n=4)

Teachers were asked whether they had found named assessments useful. Once again, (of those who knew the assessments) teachers who were engaged in MSI MQ training were more likely to find the assessments useful, but the figures involved are not large enough to be significant or reliable, only to indicate a possible trend.

**3.3.1.5 Summary of sources for and use of assessments.**

- ❖ MSI MQ programmes are the most significant source of learning about assessment materials, but not the only one.
- ❖ Teachers with MSI MQ training were more likely to know about published assessments, and slightly more likely to use them.

**3.3.2 How teachers described their practice**

All the teachers described some aspects of their assessment practice in answering questions about what assessments they knew, what they currently used, the value they placed on aspects of assessments and what happened to completed assessment material.

### **3.3.2.1 Published assessments**

Teachers were asked specifically about ten assessments, as described above in 3.2.5.2. As discussed, the Rudolph Collins scale was mainly used as a test of validity; only three people mentioned having used it, none commented on it and this analysis excludes it.

The questionnaire discriminated between the Callier-Azusa G scale, a developmental assessment, and the Callier-Azusa H scale, a communication assessment. Not all the respondents were clear about this difference, and where the analysis discriminates between communication and other assessments I have scored the Callier Azusa scales only if they were explicitly named.

#### **3.3.2.1.1 Knowledge and use of assessments**

60 teachers gave some information relating to their knowledge and use of these assessments. Seven of these knew all nine scales.

The best known assessments were the PVCS and the MC&T assessment, each known by 51 respondents (84%), followed by the ACA known by 50 respondents (82%). This is shown in a graph in Figure two. Communication assessments were the most commonly used, the PVCS by 46 respondents (90% of those who knew it), the ACA by 39 respondents (78% of those who knew it) and the CAH by 34 respondents (71% of those who knew it). Figure three illustrates the use of assessments. In answering other questions, these scales were also frequently mentioned, the PVCS by 13 respondents, the ACA by 12 and a Callier Azusa scale also by 12 although it was not always clear which one.

**Figure two: Respondents who know named assessments**

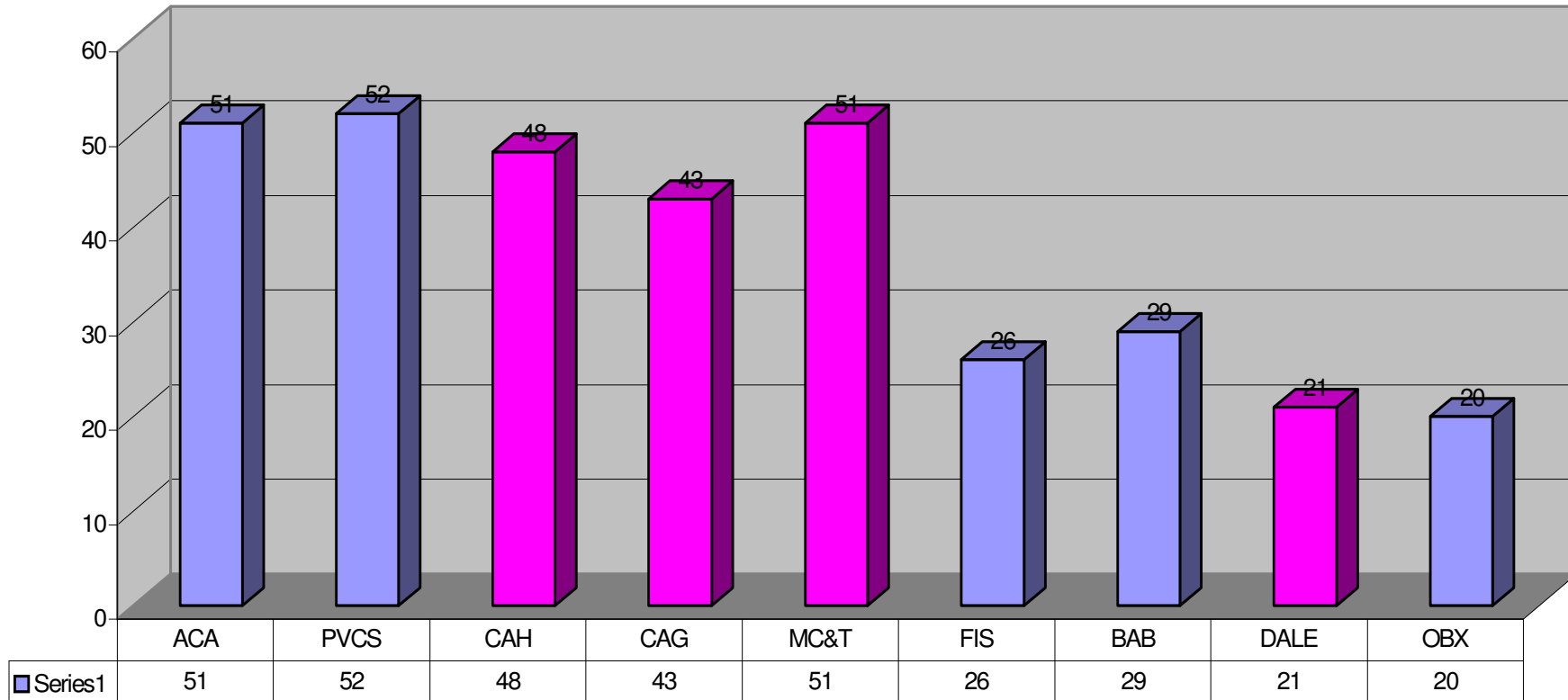


Figure two

**Figure three: Respondents who use named assessments**

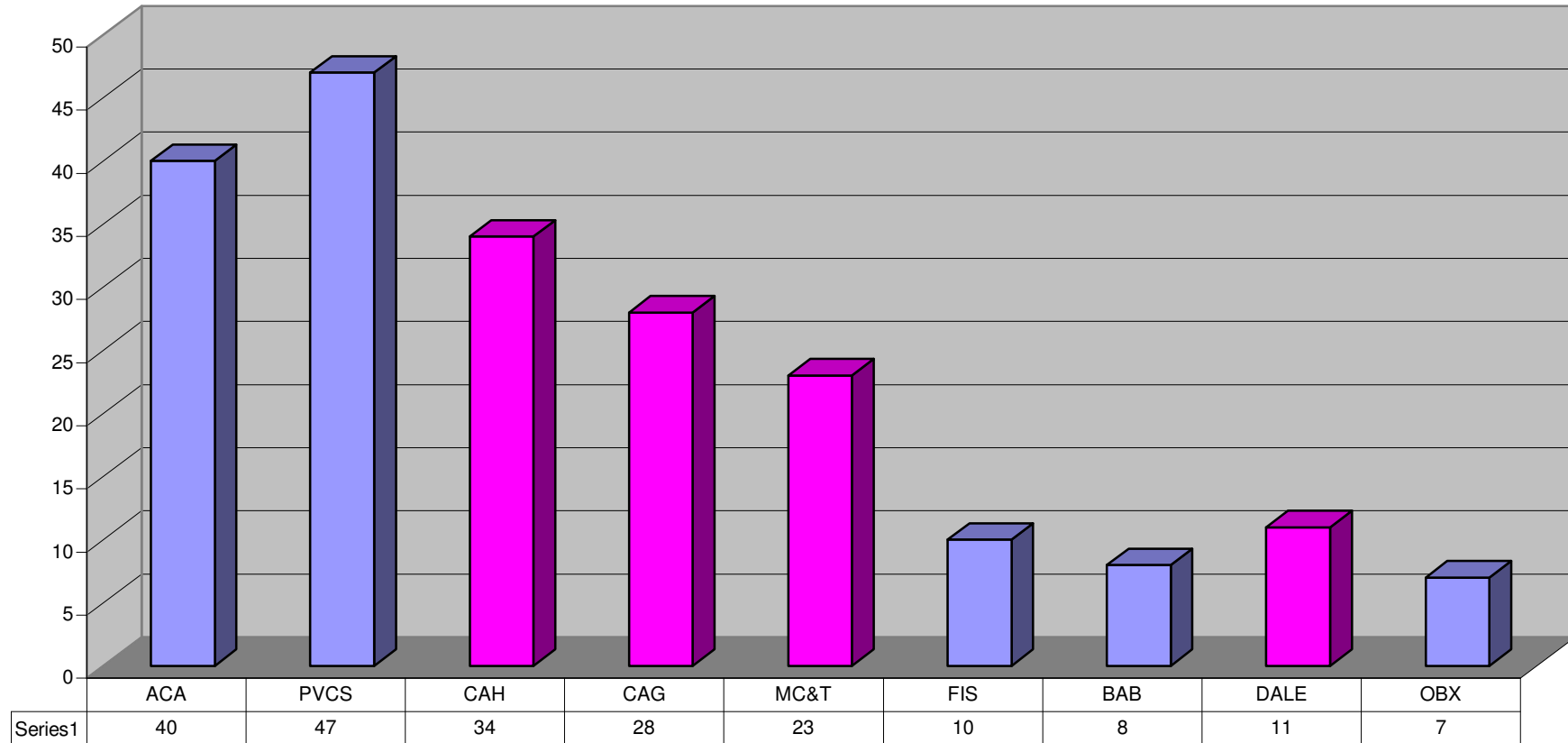


Figure three

**Figure four: Respondents who found named assessments useful**

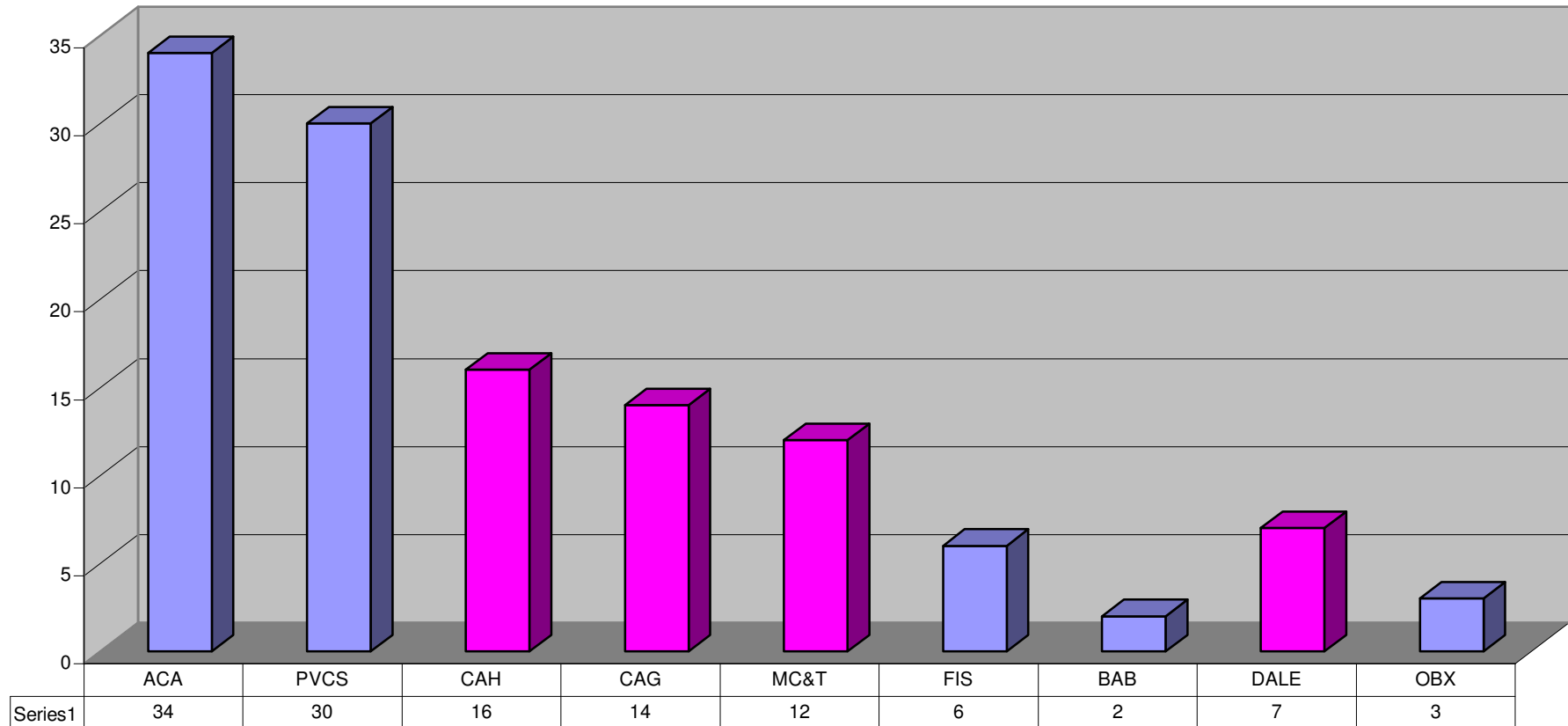


Figure four

### 3.3.2.1.2 *Usefulness of assessments*

The assessment considered the most useful was the ACA – 33 teachers describing this as useful, 85% of those who had used it. 29 teachers believed the PVCS useful, 63% of those who had used it. 11 teachers had used DALE and it was considered useful by 64% of these, but interpretation is limited here because of the small total number. Absolute numbers are shown in figure four but because not all respondents knew all assessments, comparative numbers are shown in table six.

**TABLE 6 THE KNOWLEDGE AND USE OF ASSESSMENTS**

Assessment	Known by % of total respondents n= 61	Used by (% of those who know it)	Useful (% of those who had used it)
ACA	50	78	85
PVCS	51	90	63
CAG	48	71	47
CAH	42	64	48
MC&T	51	45	52
FIS	26	38	60
BAB	29	27	25
DALE	21	52	64
OBX	29	24	43

Respondents mentioned 29 other published assessments, which are listed in appendix two.

### 3.3.2.1.3 *Advantages and disadvantages of published scales*

75% of respondents said that at least one of the named assessments was useful. Positive comments in relation to published scales referred to ease of use, coverage and ability to show progress. Three examples are given below.

*ACA particularly user friendly, quick reference, compares same test stimuli over repeated test dates (Q 7 no 54<sup>7</sup>)*

*(McInnes & Treffry) Useful because specific to deafblind (Q 8 no 24)*

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<sup>7</sup> The numbers given for quotations refer firstly to the question to which they were given in answer and secondly to the unique number I gave to each questionnaire when it was received.

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*(Margaret Tait video analysis) – a good way to record communicative progress over a long period of time (Q 7 no 15)*

The main difficulties with using published scales are listed below, with examples of comments from respondents.

1. Unsuitability for subgroups of deafblind learners: (nine mentions)

*(Callier Azusa G and McInnes & Treffry) Limited for people with physical impairment (Q 8 no 15)*

2. Inappropriateness of developmental sequence: (seven mentions)

*(Callier Azusa H) Gives you a good overall picture of development, but children don't always develop in such logical developmental steps (Q 8 no 28)*

3. Administration; time consuming: (seven mentions)

*(Callier Azusa H) Very complex and time consuming (Q 8 no 18)*

4. Suitability for learners with sensory impairment: (three mentions)

*(Equals) Found material to be unsuitable for those who are deafblind – relied too heavily on information gathered by vision and hearing (Q 12 no 7).*

Twelve commented that published assessments only gave them information they already had, were only useful in conjunction with other methods or listed only what the learner could not do:

*Most assessments confirm what we already suspected, but some are useful to show parents/professionals to back up what we are saying (Q 8 no 32)*

*[Are published assessments useful?] Yes, but the results are all related to each other and cannot be taken as absolute or definite (Q 7 no 12)*

*(PVCS) The assessment did not really give me any new information, but helped me focus on all potential areas for the development of communication skills. It highlighted more what he couldn't do (Q13 no 28)*



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Eight respondents commented about adapting scales or using them in different ways. Two examples of these comments follow:

*(Dale) Very useful (I revised it) for low ability VI and HI pupils (Q 8 no 27)*

*(Callier Azusa G and H McInnes & Treffry, BAB and Dale) Not used any formally, but have probably absorbed parts of many to use as part of "observations without specific schedule" (Q 8 no 5)*

### **3.3.2.2 Local and school assessments**

27 respondents described a local or school based assessment, including assessments devised by staff for specific situations. McNicholas (1998 and 2000) found that for pupils with PMLD:

Schools' own systems of assessment and recording were generally preferred to commercial schemes (2000 p 151)

but he may have included informal, observational assessments, which my question did not.

### **3.3.2.3 Observational assessments**

52 people (85%) said they had used observation without a schedule as an assessment. This was the largest response to questions about what types of assessments were used. Observations may also have been described in other places in the questionnaires where no specific assessment tool was named. There were many very positive comments about the value of observation, and its contribution to teaching:

*There are no formal assessments that I know of that can stand alone without informal observation over time (Q 7 no 28)*

*For me the most effective way of assessing a child is to observe their typical behaviours and reactions in their normal classroom setting (Q7 no 11)*

*I find all assessments (published) useful but I would rather do my own by observing and working with the pupil over many months (Q 7 no 23)*

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18 people used phrases suggesting that observations without schedule were a common or frequent way of assessing learners in their classroom:

*Most of my work involves informal observation (Q7 no 36)*

*I do most assessments using observation (Q7 no 20)*

Seven described their use of observations without schedule as being informed by knowledge of published schedules:

*I ... assess communication levels by observation – with a structure from the Affective Communication Assessment or the PVCS “at the back of my mind” (Q7 no 25)*

In 28 descriptions of observational assessment, 12 teachers used observation for new pupils or initial assessment, 12 for communication assessment, four each mentioned assessment of motor skills and cognitive skills. Other observations included interaction, self-help skills, science and maths. Some teachers mentioned observation in more than one category. 15 teachers discussed using their observations to inform planning or within review procedures.

Eight gave reasons for using observation assessment, including:

*This is often the best way – with 10 pupils and only 3 adults in the room I cannot give the time for proper assessments (Q7 no 55).*

This shows an understanding of the difference between formal assessment and observation, and that for this teacher observation was not necessarily a preferred choice, but may be required by adverse circumstances in the classroom.

Another said:

*Useful to concentrate on one child in particular – even if not specific outcomes from the observation! (Q7 no 5)*

reflecting perhaps some confusion about what the assessment is for.

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Finally one person said:

*People who closely observe their pupils regularly (as we all should) are not helped by assessment tools such as the PVCS (particularly as it requires you to complete information that is not directly tested, but that you already know). (Q12 no 32)*

This perhaps again illustrates the dichotomy between getting to know a learner and assessing that learner.

Reading the questionnaires certainly gave the impression that observational assessment – ‘watching children’ – was a widely used procedure, but it was not clear whether these assessments were recorded, as echoed by Rouse and Agbenu (1998) who believe that teachers using informal assessment of pupils with SEN were not recording their findings.

### **3.3.3 Summary of descriptions of practice**

- ❖ Teachers used a wide range of assessments, 85% using some observational assessment, and 85% using at least one of the named published assessments.
- ❖ Published assessments were considered useful but limitations were described. Many commented positively on the use of observation.

### **3.3.4 What teachers considered the aims of assessments**

Using the following list, respondents were asked to tick factors they thought were important in assessment and to rank the first three in order of importance:

- ◆ to inform parents
- ◆ to compare students to achievements/standards of children without disabilities
- ◆ to purchase appropriate equipment for children
- ◆ to predict future achievement
- ◆ to design new programmes
- ◆ to inform other professionals

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- ◆ it is a requirement of school/establishment
- ◆ to set targets
- ◆ to discover student's potential
- ◆ to decide on placement for student
- ◆ to solve problems (behaviour etc.)
- ◆ to measure achievement
- ◆ to organise classroom environments for students

Figure five shows how many respondents thought each aim was important, and figure six shows how important each aim was considered to be.

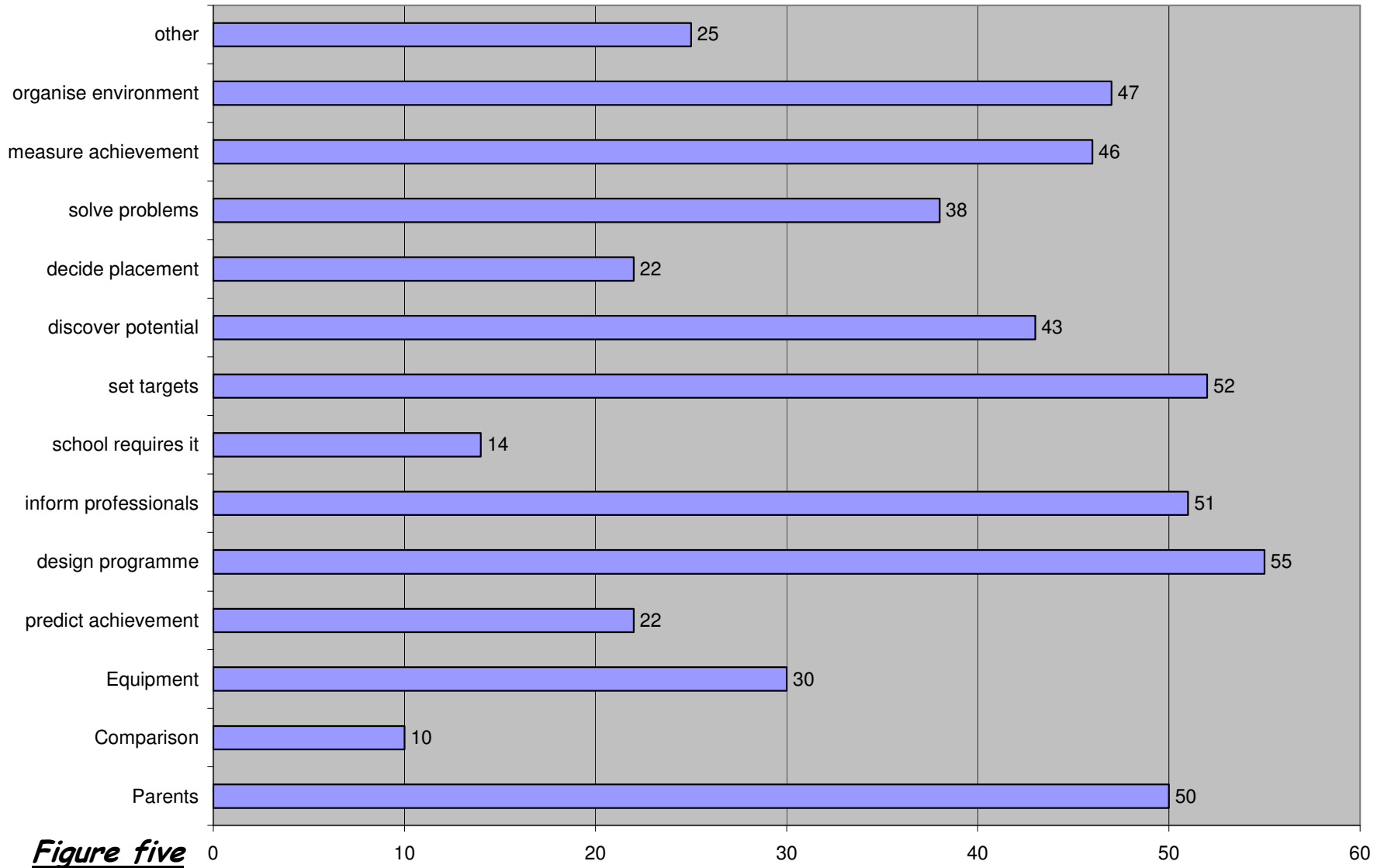
Aims thought important by most teachers were *designing programmes* and *setting targets*, followed by *informing professionals and parents*. *Designing programmes* was also stated to be by far the most important aim of assessment, followed by *setting targets*, with *discovering potential* as the third most important aim.

Respondents then rated the following statements as to which were the most important in setting annual targets:

- ◆ the requirements of a curriculum, such as the national or school curriculum
- ◆ the results of an assessment I carry out before setting targets
- ◆ what the pupil's parents want her to do
- ◆ a developmental progression, carrying on from what she did before
- ◆ what I know about what the pupil did last year

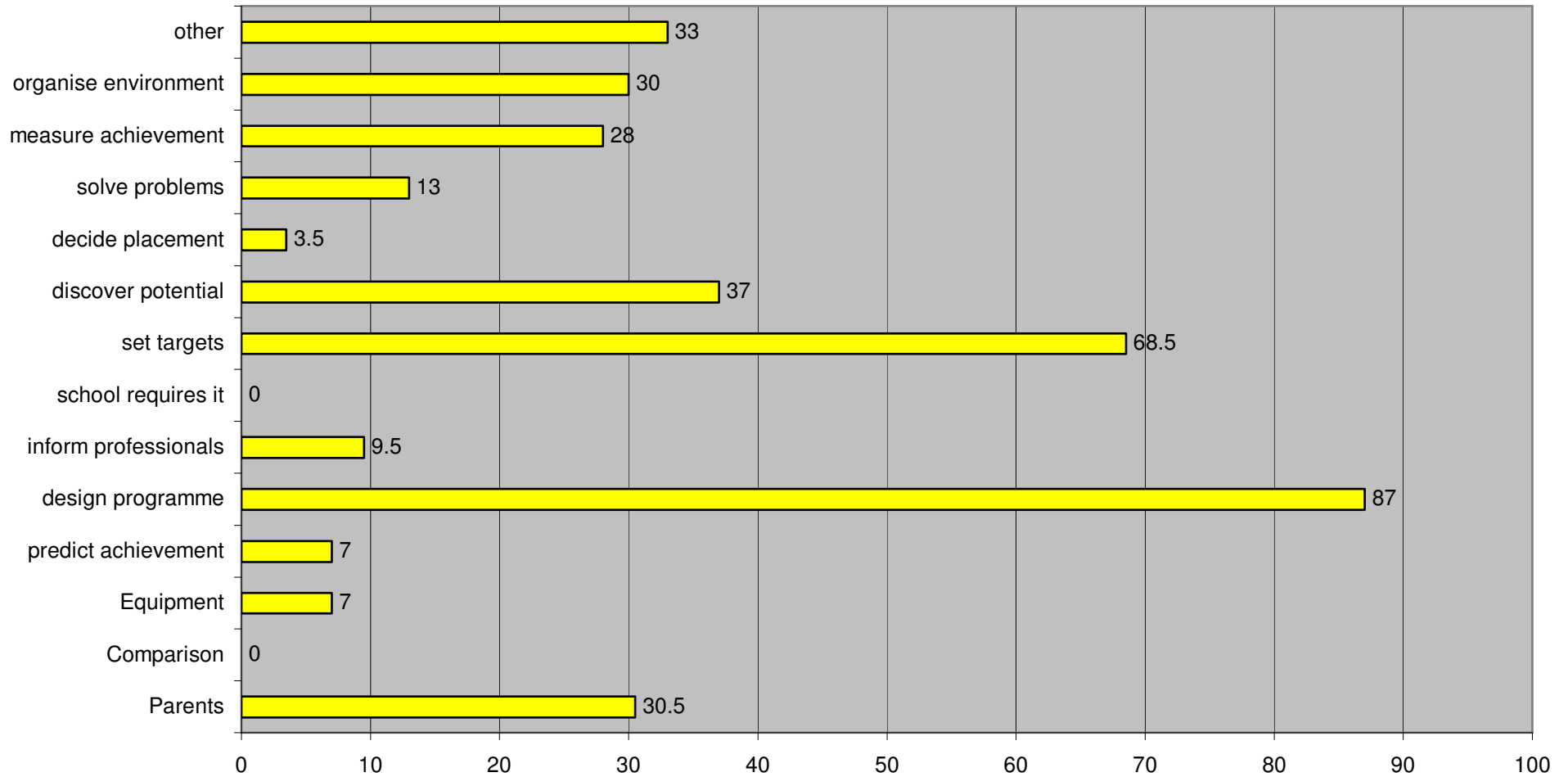
Figure seven shows how important these factors were, with the *results of assessment* and *developmental progression* considered the most important.

**Figure five; aims of assessments  
No. of times mentioned as important by respondents**



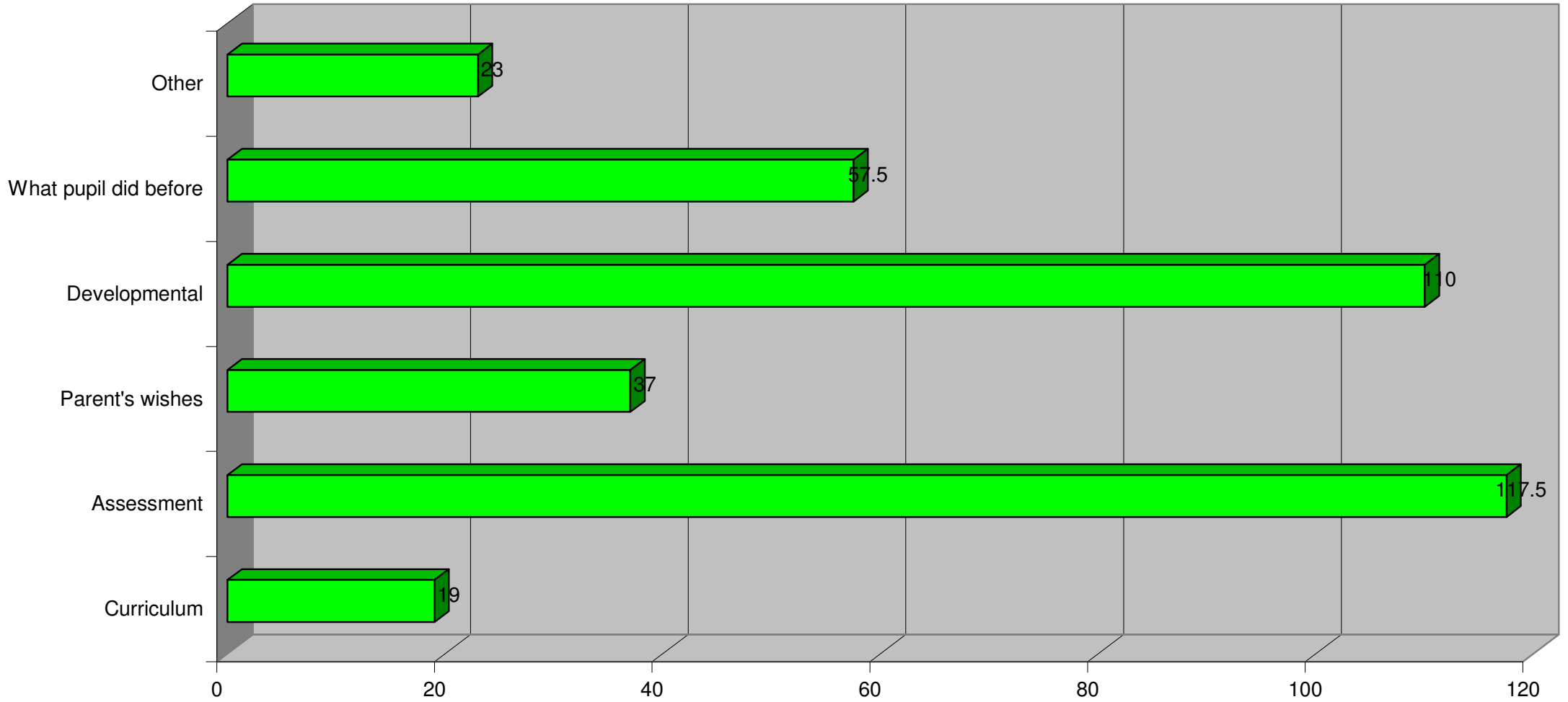
***Figure five***

**Figure six;  
Relative importance weighting for aims of assessments**



***Figure six***

## Figure seven; information used for target setting Relative weights assigned importance



***Figure seven***

### **3.3.4.1 How teachers described their practice and assessment priorities.**

Teachers described assessments they had carried out in answers to questions ten and thirteen. For question ten, 44 people described a purpose for the assessment, 15 of these relating to programme planning, and 14 to setting targets (three used both). For question 13, 27 respondents gave a reason for undertaking assessment. Seven (26%) of these were related to an assignment or research project, and six (22%) to a statutory procedure, such as statement review. Six (22%) were related to changes in school, such as new staff, and in four cases (15%) changes in behaviour were the reason. All of these reasons relate to the requirements of, or a change or challenge to, the education system. Four reasons (15%) directly related to the learner, such as difficulty in interaction or mobility, were given.

In the described assessments, the primary aims were related to training, research and the needs of the system, although respondents stated that target setting and programme planning were the most important concerns.

### **3.3.5 Summary of teachers' purposes in assessment**

- ❖ Teachers said that assessment was important in programme planning, but assessments were not always carried out primarily for this purpose.
- ❖ Assessment (at least of the formal types described) was most often described as undertaken for the purposes of the establishment or the system, and less driven by the needs of learners.

### **3.3.6 Whether and how teachers carried out assessment of learning styles.**

#### **3.3.6.1 Learning style in teacher education**

Question six asked respondents whether specialist teacher education had included the assessment of learning styles. 25 teachers said that topics related to learning style had been included in their study. Eight said it had not been included, and 28 did not answer this question.



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The 25 teachers described a range of topics which they related to the issue of learning styles, some making multiple comments. These included:

- specific strategies, such as the use of objects of reference, or the development of residual senses, or the use of backward chaining
- general issues relating to learning, such as the effect of sensory impairment on learning or attachment theory
- comments relating to their own knowledge, such as '*vaguely*' or '*theoretical practical*'.

Some comments, such as the use of backward chaining, are primarily related to teaching, not learning. Others which were more concerned with the learner's responses, such as the use of schedules, were not linked explicitly to learning. The most common response, listed by six respondents (24%) concerned intensive interaction, a teaching strategy. Three mentioned the use of sensory rooms, and three the use of Dutch strategies. Objects of reference, alternative and augmentative communication, co-active working and the effect of sensory impairment on development were mentioned twice each. The comments demonstrate some confusion about the issue of learning style. The complete list of comments made in answer to this question is given in appendix three.

### **3.3.6.2 Assessment of learning style**

Teachers were also asked if they had ever made an assessment of a student's learning style, and if so, to describe what they did. 27 teachers said that they had. Once again, the teachers gave a wide range of comments, which are all listed in appendix four. They are not easily categorised. A few discussed the content of learning styles assessment, for example:

*preferences, perceptual awareness and skills, responsiveness, range and contexts of positive negative behaviours, evidence of recognition, evidence of emotional state, whether context bound or not, recognition that learning style might vary according to place, time, activity, person who is working with child, emotional and physical state at the time (Q12 no 36)*

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*What works best, e.g. light levels, auditory environment, seating and positioning, communication methods, handling etc. (Q12 no 13)*

Teachers also mentioned the use of observation (nine teachers) the ongoing nature of such assessment (six teachers) and the use of video (three teachers). The areas mentioned included communication (mentioned by ten of the 18 respondents who described an assessment) and the best use of the visual and auditory environment. Organising the environment had been noted as a relevant factor in assessment by 47 respondents, and was fifth in the ranked order of importance of assessment aims.

### **3.3.7 Summary of assessment and learning style**

- ❖ Teachers proposed a wide range of topics in connection with learning style and learning style assessment, showing little consensus.
- ❖ Few of these teachers had training in learning style, or had carried out a learning style assessment.

## **3.4 Discussion**

The questionnaire provided valuable evidence about practitioners' use of assessment. The survey data raised issues of interest for discussion, among which I shall comment on the following:

- the use of observation
- training in observation
- the effect of training on assessment practice
- the practice of assessment
- learning style and learning style assessment

### **3.4.1 The use of observation**

Observation was described as a valuable tool by many of the respondents. However, there seemed to be some confusion between observation and

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assessment. One teacher said that observation was useful:

*even if not specific outcomes from the observation! (Q 7 no 5)*

Another teacher said that observation was *'the best way'* because she did not have time for *'proper assessments'* (Q 7 no 55). Some teachers may not have been equipped to use the valuable tool of observation properly in assessment. Aitken (1995) argues that teachers should first be clear about the purpose of assessment, then decide what type of assessment to use, and how to carry it out. For some teachers there appeared to be an inadequate distinction between getting to know learners and such focussed assessment, with clear purpose and defined outcome. Teachers may assume that their observation provides more accurate data than a formal assessment, but there is a danger that teachers' expectations may influence their judgement. Diebold et al. (1978) show that developmental scales and observational methods produce different types of information about deafblind children. Stubbings and Martin (1998) demonstrate that even experienced staff are not always able to predict learning as accurately as a test may do for people with learning disability. The survey data does not show directly whether teachers recorded evidence from observation or not, but it appears that the problems mentioned by McNicholas (1998) in relation to PMLD may affect this population too. Teachers claim to observe and continually assess, but information may not be recorded or passed on (see above, 3.1.3.). McNicholas believes (1998) that one of the reasons might be that teachers did not know enough about published assessments, but this group were well qualified and experienced and this is unlikely to be the case for them. It may be connected with the difficulties with effective assessment mentioned in chapter two.

### **3.4.2 Training in observation**

Considering the value placed on observation, it is a matter of concern that only one teacher mentioned observation as included in a training programme on deafblindness. While both current MQ programmes include work on observation, this may be insufficient for the purposes of practitioners. Since it is likely that teachers need support for the development of effective

observation techniques (Tilstone 1998a) this appears to be a significant omission in study programmes.

### **3.4.3 The effect of training on assessment practice**

MSI MQ programmes were a significant factor in providing knowledge of assessments and encouraging their use. Such training may be effective therefore in passing on knowledge of assessments. The small numbers of respondents who had not received MSI MQ training means that the difference between teachers with this qualification and those without should not be overinterpreted. However, it appears that not all that tutors on teacher education programmes considered they had taught was absorbed! Even what was not directly recalled may have affected classroom practice of teachers. However, the teachers may not consider the high levels of knowledge and understanding they had sufficient, as McNicholas (1998) found in his survey of teachers of children with PMLD (although these teachers did not have the high levels of training of those in my survey).

### **3.4.4 The practice of assessment**

The respondents discussed the limitations of published assessments. This included the fact that they sometimes only told the teacher what they knew already, or that they only provided lists of what learners could not do.

Linked with the evidence in chapter two, this perhaps shows that published assessments, even those written specifically for deafblind children, are not adequate for the purposes of practitioners. As McNicholas says about pupils with PMLD:

- published materials do not adequately support the majority of teachers, in that they do not fit the wide range of pupils' needs (McNicholas 1998 p 96).

This may be why teachers described using assessments primarily for the requirements of the education system (see 3.3.4.1.), because in these

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circumstances the formal assessment had influence. As one teacher said of formal assessments:

*I wouldn't use it normally unless I felt for some reason I needed to blind someone with science. Possibly if someone was insisting the deafblind child was PMLD i.e. mistaking deafblindness for cognitive deficit (Q 13 no 36).*

Respondents said that target setting was informed by assessment, but the evidence on this was ambivalent. Target setting did not appear to be a high incidence reason for the assessments described by teachers. There was little discussion of the process of learning in the context of assessment.

### **3.4.5 Learning style and learning style assessment**

Although nearly half the teachers commented on learning style, there was no consensus about what learning style meant. Some comments were more related to teaching style than learning style. While some issues which seem to relate to learner preference were discussed, for example, organising the environment, these were not always linked to learning style. The questionnaire gave no definition of learning style and teachers may not have had the opportunity to think through this concept reflectively in relation to their practice. They may also not have been introduced to the concept at all, or may have believed that it was irrelevant to learners with deafblindness.

Although teachers gave a range of responses to assessment of learning style the inconsistency of these probably indicates that the topic 'learning style' was rarely raised in training, and that teachers have related what they think is learning style to training they have had before.

The concept of learning style and its relation to deafblind learners is not sufficiently understood. Before this concept could become useful, it needs to be explored in more detail.

## **3.5 Conclusions**

The questionnaire is possibly the most complete survey of assessment practice for teachers of deafblind learners in the UK. Although it involved only 61 respondents, these were qualified and experienced practitioners and were

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able to describe their current practice effectively and with understanding. The survey generated valuable evidence about what types of assessment were used, how useful such assessments were, and how training affected assessment practice. Descriptions of assessments showed why teachers carried out these assessments. There was evidence to support some of the hypotheses presented in 3.2.4 but evidence for others was weak or contradictory.

Almost all the teachers did have specialist teacher education, and because the numbers for comparison were very small, there is a danger in overinterpreting the evidence. However, teachers with MQ MSI or other lengthy training in deafblindness did overall know more specialist tools than those without.

Teachers did use published tools, but the evidence suggested that they used these for special purposes (such as writing assignments) rather than as part of their regular classroom practice.

Teachers said that they based target setting on assessment, but when asked to describe their practice, this was rarely reported. Further investigation of the basis of target setting would be valuable.

Most teachers did not have a clear understanding of learning style, and it seems that it had not been covered in specialist teacher education. Fewer than half of the teachers had carried out an assessment which they related to learning style. Whether these assessments tapped any consistent quality was unclear.

This chapter aimed to add evidence to support understanding of the question

- What is known about the assessment of deafblind children?

and to explore the question:

- How valuable is such assessment, particularly in relation to improving teaching and learning?

Significant new evidence from classroom practitioners was gained to illustrate the practice and understanding of assessment for deafblind learners.

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Teachers also gave descriptions of assessments which illustrated how valuable they felt assessment was, primarily through observation. However, there did not seem to be much evidence of the effect of assessment on improving teaching and learning. The primary purposes of assessment were concerned with the demands of the system. There was scant evidence about using assessment to change conditions, in particular to change conditions for learning. Teachers did not give examples which illustrated such practice.

This has confirmed my concern with the issue of effective teaching and learning. The data also shows that there is no common understanding about learning style in this population, and no clarity about how this might be assessed. Teachers had little information about learning style and many were unclear about its meaning. The majority of teachers had not carried out an assessment of learning style. If the concept of learning style is to have value in assessing learning and improving teaching and learning for deafblind children, a better understanding of the concept of learning style, and learning style in relation to deafblind children is needed. This will begin to answer the question:

- Is the concept of learning style relevant to deafblind learners?

In the next chapter, literature relating to learning style, and learning style in children with complex needs is reviewed.

## Chapter four

### **Cognitive (learning) styles in deafblind children; a review of literature relating to style**

“Her mind dwells in darkness and stillness, as profound as that of a closed tomb at midnight. ... In her intellectual character it is pleasing to observe an insatiable thirst for knowledge, and a quick perception of the relations of things. In her moral character, it is beautiful to behold her continual gladness, her keen enjoyment of existence, her expansive love, her unhesitating confidence, her sympathy with suffering, her conscientiousness, truthfulness, and hopefulness”

Charles Dickens (undated) on Laura Bridgman American Notes p 35 & 38

#### **4.1 Introduction**

The survey of good practice in assessment for teachers of children who are deafblind showed that teachers used a wide range of assessments in regard to development and communication with the learners they are working with. However, they did not share an understanding of the concept of learning style, and they had not been taught about learning style on specialist teacher education programmes. Although some teachers described learning style assessments they had carried out, these often related to teaching issues rather than children’s attributes.

In order to seek a more complete understanding of the meaning of learning style and its relevance for children who are deafblind, I carried out an examination of literature concerning learning style, and my findings are described in this chapter. This literature review is intended to provide more information to answer the question:

- Is the concept of learning style relevant to deafblind learners?

and to begin to examine the question:

- If so, is it possible to assess learning style in this population?



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In this chapter I discuss published literature on cognitive style, and cognitive style in relation to children with significant disabilities. The aims of this inquiry were to discover what lay behind the concept of cognitive style, on what assumptions it was based, and how it was assessed. In particular I wished to explore the concept as it related to those who have learning disabilities and specifically to those who have sensory impairments. There was also discussion in this literature about whether assessment of learning style could lead to improvements in teaching and learning, and to provide some information for answering the question:

- Can such an assessment be used to improve teaching and learning?

Through this examination my own understanding of the construct of cognitive style in relation to learning developed. In this chapter I first explore the concept of cognitive style, on what assumptions it is based, its relation to learning, and how this might be assessed. I then seek information about how this was applied to people with disabilities and sensory impairments. Finally I discuss the issue of learning style in relation to the population of deafblind children, and discuss the meaning of the terms in relation to this group. This foundation of enhanced understanding in relation to style leads on to practical interventions in classrooms with deafblind children and their teachers.

In the initial part of this chapter I use the term *cognitive style*, as most likely to suggest the concepts in which I am interested, except where an author clearly uses another term to describe her work. A discussion of terminology is presented in 4.2 and 4.8.2.

### **4.2 The concept of cognitive style**

Interest in the area of cognitive styles began about 50 years ago, building on previous ideas (Riding 1997). For about 25 years it was an area of significant interest and some research as many writers investigated the scope of this new concept, and linked it with their understanding about thinking and other aspects of psychology. In the following 25 years it has inspired less interest and research, possibly as it became more familiar, and as it became clearer

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that it provided no straightforward new description of cognition and personality (Jones 1997). There remained some interest amongst writers and researchers in the more defined concepts of style, and there is some ongoing investigation, particularly in relation to adult learners. However, in the past five years, it has been noticeable that the term *learning style* has begun to be used more widely, although frequently without a definition of the term, perhaps as if everyone knows what it means. For example, in the guidance issued by Sense in relation to the Department of Health's circular on deafblindness (DOH 2001) it is one of the items on a checklist for assessment of deafblind children, although without any clarification as to what it means (Sense 2001). Without a common understanding of the term, it is unlikely that the concept can be used effectively to improve teaching and learning.

Over the last 50 years, different authors have used a variety of terms to describe similar areas of interest. The terms cognitive and learning style are not always well distinguished, and the recent increase in interest has further confused the picture. As Riding and Cheema (1991) describe:

the terms cognitive style and learning style have been much used by theorists, but what they mean still remains very much up to its author (*sic*)(p 194).

There has been a proliferation of descriptions of styles, which their authors consider to be largely distinct. Some have attracted much supportive research, for example, the reflectivity/impulsivity dimension and the field dependence/independence dimension (see for example, Jonassen & Grabowski 1993). Reflectivity/impulsivity relates to the speed of response to a problem and field dependence/independence relates to a person's ability to dis-embed an item from the context in which it is presented (Rayner & Riding 1997). Others are of more restricted interest, for example, tolerance for unrealistic experiences (Klein & Schlesinger 1951 cited in Kogan 1976). The abundance of style concepts has led to some attempts to group styles into superordinate categories by imposing their own definitions. For example, Riding (Rayner & Riding 1997, Riding & Cheema 1991) proposes two principal cognitive style groups, *wholist/analytic* (including field

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dependence/independence, reflectivity/impulsivity, levelling/sharpening, cognitive complexity/simplicity and others), and *verbaliser/imager* (including sensory modality preferences, abstract/concrete thinking and others).

Schmeck (1988b) argues that there may be two primary poles of learning style, one which is global, and divergent, based in the right brain, where processing is simultaneous; and one which is articulated, and convergent, based in the left brain, where processing is successive. Based on Schmeck's grouping, the global style would include the ability to process wholes, to see similarities, to approach learning at a deep level, to think divergently, to use context effectively, to work swiftly without worrying about error, and to process multiple stimuli simultaneously. The analytic group would include the ability to focus on detail, to see differences, to dis-embed things from their context, to think logically and not make mistakes, and to process information sequentially. As described later (in 4.6) it is possible that the global group are more interested in people, the analytic group more interested in objects and activity.

Armstrong et al. (1997), and Torrance and Rockenstein (1988) consider that the differences between these two groups may be related to the activity of the two hemispheres of the brain, hypothesising that global thinking would be based in the right brain, and analytic thinking in the left. Riding et al. (1997) found some relationship between the styles of wholist-analyser and verbaliser-imager and left and right brain activity. However, there is not sufficient evidence to indicate a direct relationship. LaRue Guyer and Friedman (1975) shocked left and right hemispheres independently and showed that field dependence (assumed to be right hemisphere linked) *increased* following shock to the right side of the brain, and field independence increased following shock to the left hemisphere. Zhang (2002b) proposes that what was previously considered to relate to hemisphere functioning is now seen more as related to style. This would mean that style is the dominant factor influencing where information is processed in the brain. The link between hemisphere activity and style is likely therefore to be complex, most especially for children with brain damage.

### **4.2.1 Learning/cognition and cognitive styles**

The possession of cognitive processing (learning) is probably a pre-requisite for cognitive styles. Chapter two included a brief overview of learning models in relation to deafblind children. They are still more briefly revisited in this chapter, in order to relate them to the construct of cognitive style. The model of learning used by the majority of writers on cognitive style is overtly or implicitly concerned with information processing (see for example, Miller 1987, Riding & Pearson 1994). The learner prefers the easiest and most efficient processing route, and this is therefore the basis of style.

Saracho (1995) describes children's play as related to Piaget's developmental framework and argues that cognitive style is a significant factor in how children approach 'gathering and organising information' from the environment (p 405). Cognitive style affects the way in which the child approaches activity and objects.

Style appears not to be discussed by Vygotskian authors, but the child's ability to relate to adults and to respond to support, and the best ways of facilitating this, would presumably be significant.

Likewise, style is not generally discussed in relation to learning theory. However, the effectiveness of rewards and the use of prompting would be of clear significance to successful learning.

Within the dynamic systems approach cognitive style would be one of the systems in the interaction from which individual learning and development evolves. Depending on which other systems were involved in the learning process, an individual's cognitive style could affect the whole organism and all of learning and development.

The construct of cognitive style has implications for all these approaches to learning. Cognitive style relates to cognitive process and learning and could be expected to be found in individuals with cognition, as discussed in 4.2.1.1.

#### **4.2.1.1 Deafblind children and learning**

Children who are deafblind do learn and develop. That they can learn independently of teaching is shown by the use of strategies which are unlikely to have been taught because they are unusual and might not be recognised by sighted hearing carers (Murdoch 1994). The assumption of this inquiry is that deafblind children have cognitive processes and do learn. Although each child is different, most children make progressive changes in learning and behaviour (White 1991). McInnes and Treffry (1982) emphasise that damage to perceptual systems does not necessarily result in learning disability. While many deafblind children are at very early stages in learning for long periods (QCA 1999), others become increasingly and observably more skilful as they pass through these stages to achievements recognisable at formal academic levels (Porter et al. 1997). Presumably their cognitive styles could then be assessed by conventional means. Other children show few learning behaviours and little independent movement. Recognising learning in these children is very difficult (see also 6.7.1. where teachers describe this difficulty). My experience as a practitioner, and that of teachers who, in response to the questionnaire (see chapter three) gave examples of deafblind children learning, show that deafblind children learn and have cognitive processing. If cognition is present, then cognitive styles, if they are in fact innate and hard wired (see below 4.3.1.) will exist. If cognitive styles develop, then as cognition develops, even if slowly, the styles will emerge. Where learning can be recognised then it can be expected that cognitive styles, possibly nascent and evolving, will also exist.

### **4.3 The construct of cognitive style**

#### **4.3.1 Development of styles**

Using an information processing approach, some cognitive styles theorists believe cognitive styles are innate, pervasive and affect all aspects of a person's life (Riding & Rayner 1998). It is considered that they are not fundamentally influenced by the environment or by education, and they cannot

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be so influenced. Riding's definition of styles in this way leads him to exclude factors which are influenced by development. Sternberg (1997), however, believes that as an individual develops, different styles may be utilised to accommodate different aspects of life over time, but Sternberg does not relate this directly to learning. In his opinion:

Styles, like abilities, are fluid rather than fixed, and dynamic rather than static entities.... it is an ongoing process throughout one's life span (p 89).

From this viewpoint styles come into being through socialisation, in response to development and the environment, and can be modified or acquired through teaching (Sternberg 1997). Other authors have also discussed or researched altering cognitive style through training, for example, Kagan et al. (1966), and Denney (1972) (both cited in Kogan 1976) and Baird and Bee (1969), and with others they believe that cognitive styles may be modified by teaching (Cashdan 1971). Barraga (1976) considers that children with visual impairment develop particular learning styles which may continue to evolve after age three, although she does not give evidence for this. Feuerstein describes some fundamental difficulties some children have with learning which include impulsive behaviour, lack of accuracy, and impaired ability to perceive constancies. All of these might be considered to relate to cognitive style dimensions such as reflectivity/impulsivity and field dependence/independence, although Feuerstein does not refer to the cognitive styles literature (Feuerstein et al. 1979). He describes a programme for altering children's ways of thinking, through exercises which include, for example, recognising patterns within apparently random dots, which appears to reflect developing field independence (Feuerstein et al. 1980). This programme achieves success in gaining higher IQ scores (another capacity which has been considered unalterable) (Feuerstein et al. 1980), although whether it would change previously measured cognitive style has not apparently been researched so far.

### **4.3.2 Dimensions of style**

Kogan (1976) delineates three types of cognitive style. Type 1 styles are demonstrated by a measure of an absolute, which is likely to improve as a child gets older, such as the ability to place a rod upright in a frame, a measurement of field dependence/independence. Type 2 styles reflect more maturity on one dimension than another such as reflectivity/impulsivity, and Type 3 styles are bipolar, where both poles are valued such as breadth of categorisation, (which is not discussed further in this inquiry). Some authors describe all styles as essentially bipolar, that is, representing two ends of a continuum (for example, Riding & Cheema 1991, Schmeck 1988a). These writers that argue that an effective measure of cognitive style should see positive responses at both ends of the scale. For some standard tests, for example for field dependence/independence, individuals at one end of the continuum score highly and those assumed to be at the other end score poorly; that is, the test is for negative aspects of the field dependence style, not positive ones. Some cognitive styles have been identified as more *intelligent* than others, for example, Kogan's review (1976) of cognitive styles research in early childhood indicates several strong linkages between styles and measured intelligence. Feuerstein (Feuerstein et al. 1979, Feuerstein et al. 1980) would consider a field independent, reflective cognitive style as recognisably more 'intelligent'. Sternberg agrees (1997):

Isn't it almost always better, say, to be field-independent rather than field dependent or reflective rather than impulsive? (p 142).

Saracho (1997) also describes field dependence in a very negative way:

FI [field independent] children are creative, curious and exploratory, although they have unusual thought modes, whereas FD [field dependent] children are suspicious, jealous and envious of others (p 25).

However, firstly, in other cultural settings speed of action despite the risks might be the style considered superior; secondly, interpretations relating to conformity and willingness to please would consider field dependent children's behaviours more positively in the educational setting.

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Some consider that styles develop as children grow older, so that a field independent four year old might score the same on an assessment as a field dependent six year old (Kogan 1976, Cashdan 1971). But for other styles, development and maturity apparently do not influence the child's style (for example, Kogan 1976 on breadth of categorisation and styles of conceptualisation). Cashdan (1971) argues that measures of style remain valid while the difference between developing children remains the same, so that more impulsive children, while becoming more reflective, continue to be more impulsive than their peers. Riding, however, believes that cognitive style, when properly measured, is not subject to change:

A person's cognitive style is probably an in-built and automatic way of responding to information and situations. It is probably present at birth or at any rate is fixed early on in life, and is thought to be deeply pervasive, affecting a wide range of individual functioning. A person's cognitive style is a relatively fixed aspect of learning performance (Riding & Rayner 1998 p 7).

Intelligence, growth, background and gender are noted by some as being related to cognitive style (Kogan 1976). Witkin (1964) and Rothbart and Posner (1985 cited in Schmeck 1988c) show some possible, but weak correlations between differences in mother-infant interaction, and believe that style may originate from these interactions. Severiens and Ten Dam (1997) suggest that learning styles may be linked to gender identity rather than gender, and thus related to development and socialisation rather than being innate. But Riding believes that styles which apparently develop must reflect some other capacity. He says (with Rayner 1998):

for the construct of cognitive style to be useful, the style dimensions must be shown to be separate from intelligence, different from personality, and unrelated to gender (p 10).

Sternberg (1997) however, argues that styles change to meet current needs, and that a profile of styles is more likely than a single style. Others conceptualise the development of a catalogue of styles, from which an individual can choose in managing particular situations (Kogan 1976,



Sternberg 1997, Davis 1971, Schmeck 1988c). Schmeck (1988c) Entwistle (1987) and Pask (1988) consider that the most competent style is versatility, the ability to use the benefits of both aspects of the style.

#### **4.4 Assessment of cognitive style**

A variety of assessments have been created to identify the various aspects of style as they were described and researched (Riding & Dyer 1983). The creation of a test for a style appears, on some occasions, to have created a style. Most assessment has focused on adult education (Tennant 1988) and other individuals who are able to perform standard tests and describe their own abilities in learning situations. Some adaptations to tests have been made for younger children (see 4.6 below).

It is not clear that all assessments measure the same thing, and they may, in fact, be using different constructs on which to base these assessments. Curry (1983), Murray-Harvey (1994) and Hudak (1985) demonstrate that for many measures of cognitive style test-retest processes have not adequately demonstrated reliability. This indicates some doubt about what may be being measured by these tests.

#### **4.5 Curry's onion model**

One attempt to examine styles and to reach an understanding of the differences in the assessments and in the capacities they were measuring was made by Curry (1983). To assist in understanding and using the concept of learning styles, Curry describes a model comprising three layers: *the onion model*. The outermost layer she calls Instructional Preference, that which relates most obviously to the learning situation, and which is influenced by the environment. This includes such preferences such as moving around or sitting while learning or learning through activity or through demonstration, as mentioned in Dunn and Dunn's learning styles assessments (see Jonassen & Grabowski 1993). The second layer is Information Processing style, the individual approach to assimilating information following processing, which includes sensory features, memory features and some aspects of

wholist/analytic dimensions. The innermost layer she calls Cognitive Personality style, the individual approach to adapting information, which is the most stable, because it does not relate to the individual's environment. This includes dimensions such as reflectivity/impulsivity. Curry argues that the outer layers are likely to be the most easily influenced by training or environmental pressures. The inner layers, she considers, are more static, and part of the construct of personality (see also Zhang 2000 & 2002a). Not all would agree with this analysis; the writers of the Productivity Environmental Preference Survey which would appear to measure an outer layer consider that the physical and environmental learning preferences they assess are biologically based and largely resistant to change (Price et al. 1991, Dunn 1991 both cited in Murray Harvey 1994).

Although Curry writes about medical training for adults, this model is useful because it shows how a number of different types of measurement of learning/cognitive style can relate to one individual. It recognises the value of instructional preference, while proposing deeper levels to be tapped. For children with inhibited cognitive development, it implies that some layers may be accessible, even if others are not. Instructional preference may be visible, since it is more likely to relate to observable behaviour, but cognitive personality style is more likely to be approached only through metacognitive strategies. However, it does not show how the stable innermost layers relate to the more malleable outside layers, nor whether measurements of the surface are related to measures of the inside.

### **4.6 Cognitive styles in young children**

Standard measures of cognitive styles are tested by performance or self report, and these are not suitable for administration to young children. At least two strands of research have attempted to investigate cognitive styles in infants and young children.

Firstly, some have altered test items while maintaining a central principle. For example, the Embedded Figures test, a standard measure of field

dependence/independence has been adapted at least twice. Both the Pre-school Embedded Figure test (Coates 1972, described in Kogan 1976) and the Childhood Embedded Figure test (Karp & Kinsdadt 1963 described in Kogan 1976) replace abstract geometric figures with meaningful pictures.

Other researchers have used the concept of stability to discover the precursors of cognitive styles by looking at early behaviours and linking them to later, measured styles. Korner (1964) speculates on the possible significance of babies' responses to stimuli and how this could be related to later personality and cognitive attributes. Kagan (1971 cited in Kogan 1976) measured various behaviours in a longitudinal study of infants but found few correlations between the observations and measures on adapted cognitive styles tests at 27 months. For example, boys who were impulsive at 27 months showed more 'restless twisting' at 13 months, but the correlation was not seen in girls, and along with other evidence, the measurements in infants were not conclusive. In these babies, of course, style development may be caused by the environment and interaction, rather than influencing it (see Witkin 1964 and Rothbart & Posner 1985 cited in Schmeck 1988c and above in 4.3.2).

Saracho (1995, 1997, 1999), used personality profiles to measure field dependence/independence in pre-school children using personality profiles of what she considered field dependent and independent behaviours and comparing them with children's play choices. In her 1999 study, she demonstrates how choices between physical (for example running), manipulative (for example threading beads), block (building cubes) and dramatic play related to cognitive style. Children who had been assessed on the field dependence/independence dimension were observed playing. Field dependent children used the play opportunities to engage their peers in interaction, and appeared more aware of others while field independent children were more likely to choose physical and block play. Both groups did engage in all types of play some of the time. As yet, Saracho's measures of play have not been used alone to assess cognitive style in children.

Others have examined the social or object orientation of young children and related this to the field dependence/independence dimension of cognitive style. Dreyer et al. (1973) and Coates (1975 – both cited in Kogan 1976) attempted (with ambiguous and uncertain results) to relate the choice of play mate or play material by pre school children to cognitive style, on the basis that field dependent children were more socially oriented, and field independent children more object/task oriented.

Kogan's extensive review of research with infants and young children in 1976 concluded that it was very hard to know what any of the research meant:

is field independence-dependence, when assessed in the preschool years, tapping essentially the same construct as assessed in later childhood and adulthood? (p 15).

He believes all the research he reviewed was dependent on the context and materials used. Kogan (1976) believes that the way in which research is carried out can fundamentally alter the results. Differences in the questions asked and the context or environment changed the responses of children in testing situations. Perhaps all that can be said with confidence is that behaviours thought to be related to cognitive style measures may be observed and recorded in young children. How reliably these match to performance tests in adults is unclear. As Saracho (1997) concludes:

children's cognitive style and play behaviours are probably of a more complex nature than researchers have proposed (p 24).

#### **4.7 Cognitive styles and disability**

As described above, cognitive style measures are generally dependent on performance assessment or self-report by individuals. Literature about young children indicates that there are difficulties in assessing or ascertaining cognitive style for children who cannot undertake formal testing. Sternberg's use of the term 'mental self government' (1997) suggests the use of metacognition. However, if any component of cognitive styles is fixed and innate, then it should be present in any person with cognition, however early

their developmental stage, not only when that individual can employ metacognitive skills:

A person's cognitive style is probably an in-built and automatic way of responding to information and situation. It is probably present at birth or at any rate is fixed early on in life (Riding & Rayner 1998 p 7).

Finding the expression of this style may, of course, be more difficult. If cognitive styles develop, then it is likely that they develop as cognitive processes develop. There is no reason to suppose that cognitive styles only become relevant at the developmental stage when it is currently possible to measure them easily and reliably.

#### **4.7.1 Cognitive styles and learning disability**

There is little discussion in literature about cognitive style in people with significant learning disability. While there is increased use of the term *learning styles* in relation to education for this group, what is meant by this is not well defined in most instances.

In the field of autism, cognitive styles are sometimes described as having a distinct profile (Jordan & Powell 1995) with visual skills dominating language skills, and better perception of parts than wholes. This is outside the scope of my inquiry.

Some other syndromes associated with learning disability appear to have specific 'footprints' which may relate to cognitive style. Simon et al. (1995) concluded that there were distinct cognitive profiles for children with Fragile X and Down syndromes, but that these were not distinguishable at early levels of development. People with Down syndrome may have better visual than auditory skills, and find reading easier than would be expected in relation to otherwise apparently slow development, especially in speech (Wishart 1990 and 1993). Children with William's syndrome also have a distinctive cognitive profile, skilled in language above what might be expected from their overall development (Karmiloff-Smith 1992). There is some evidence therefore, although so far as I know untested, that certain cognitive styles patterns may

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be generally present in youngsters with some syndromes (and presumably inherent).

Babbage et al. (1999) argue that within the heterogeneous population of children with SLD the concept of learning styles is useful in encouraging teachers to enable pupils to learn. They propose building up pupil profiles where children are not able to undertake standard testing. This profile, built largely on teachers' perceptions of learning preference, shows how individuals cope with different types of learning experience on a scale ranging from ease and comfort to frustration and stress. Such assessment, they believe, can encourage the development of effective and versatile styles. Richmond (1993) indicates ways of encouraging children with learning difficulties to make choices relating to materials, environments and other aspects of their learning programmes:

a group of five, together with the teacher, given the same stimulus/learning objective, may decide to approach it in different ways (under the teacher's guidance) (p 22).

Read (1998) discusses the benefits of adapting for cognitive style in fostering inclusive practice, but does not relate this to learners with the most complex needs.

Ozer's diagnostic evaluation (Ozer et al. 1970, Ozer & Richardson 1974, Ozer 1978) has already been described in chapter two (2.7.2.2).

In relation to learners with highly complex needs, Pagliano (1999) uses variables including sensory modalities, motivation and perseverance, from Dunn and Dunn's learning style model (1992) to:

design a more effective and efficient learning environment for each individual child (p 71)

within the framework of a multisensory environment.

Wilder and Granlund (2003) argue that caregivers are aware of the 'behavioural styles' of children with profound disability. They relate these to the intensity of the children's temperament, and to whether they use predominantly passive behaviour or highly intensive style during interactions.

### **4.7.2 Cognitive styles and visual impairment**

Despite the potential value of cognitive style research, in people with sensory impairment, for an exploration of the innate or developing nature of style, there is relatively little discussion in literature. A hand search for the last fourteen years of major journals in the fields of sensory impairment, (*American Annals of the Deaf, Deafness and Education, Journal of Visual Impairment and Blindness, British Journal of Visual Impairment, Visability*) and two magazines relating to education for multiply impaired children, (*Eye Contact and Information Exchange*), and *Child; Care, Health and Development* revealed only the following reviewed articles in relation to cognitive styles in children with sensory impairments. In the same time period, only one article (Adams 2001) was found in *Educational Psychology* (which maintains a strong interest in cognitive styles) relating to sensory impairments and cognitive styles.

Witkin et al. (1968) and Witkin et al. (1971) investigated cognitive style primarily to explore the nature of styles themselves, rather than for its practical application to people with visual impairment. They propose the hypothesis that lack of vision would lead to lack of articulation (a greater degree of difficulty in dis-embedding items from their context) and more global thinking (related to the field dependence/independence style). Witkin and his colleagues used assessment tools which they claimed:

could easily be translated into nonvisual form (Witkin et al. 1971 p 20).

They tested sighted and blind participants in a non-visual, usually tactual form, but they did not check whether the results for sighted people were the same as when tested through the typical, visual format. They did not discuss the nature of touch as a linear, synthetic process in contrast to the wholistic nature of vision. No evidence was sought as to whether sighted participants were coding the task visually. Although blind participants showed high scores (showing good dis-embedding ability) on the auditory task, Witkin and his colleagues (1971 and 1968) attribute this to unusual sensory development and consider their hypothesis largely proved. However, probably only the

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auditory test was identically processed by the sighted and blind participants. Huckabee and Ferrell (1971) used a similar version of the testing regime and found that the results of the test delivered tactually and by vision to sighted people did not correlate well. They conclude that this test delivered tactually did not measure the same capacity as when it was delivered visually. John and Boucouvalas (2002) tested sighted mature adults and found that measured cognitive style through vision was not a reliable indicator of success at tasks delivered by audition.

Witkin et al. (1971) also examined children with retinoblastoma (who were blind following removal of their eyes in early childhood). This group were more field independent than other groups of blind people. Witkin suggests that this may be due to a genetic predisposition to articulated thinking, which is shared with the predisposition to retinoblastoma. He acknowledges that there is insufficient evidence to verify this and that other causes may be responsible for the difference. Warren (1994) points out the significance of these exceptionally good performances from blind children, raising the question of how such development could be encouraged in other blind children. Witkin says that the evidence from his studies and others with people with blindness, deafness or learning disability:

gives the concept of cognitive style far greater generality (Witkin et al. 1971 p 31).

Garb (2000) describes the difficulties blind people have with part-whole relationships, orientation in space, following directions and impulsive searches. He used tactile versions (raised diagrams) of materials from Feuerstein's Instrumental Enrichment to teach metacognitive organisation. Although this was successful in context, the participants were not able to generalise new skills to other situations.

The evidence is confused as to the relationship of visual impairment to cognitive style. It is not clear that the skills and styles which were apparently tested or taught were the same as those tested and taught in sighted people. How the understanding of cognitive style might be applied to improving learning for visually impaired people is discussed only in passing.



### **4.7.3 Cognitive styles and hearing impairment**

In the field of deafness, there has been most interest in the dimension of reflectivity/impulsivity, because of a belief that deaf children were more impulsive (Altshuler et al. 1976). For this reason, research is more related to a need to understand children's capacities and abilities than to define psychological constructs as has been the case for visual impairment. The relationship of style to communication is considered an important factor. Altshuler (Altshuler et al. 1976) concludes that deaf children are more impulsive than matched hearing children. Harris (1978) demonstrates that deaf children of hearing parents are more impulsive than those of deaf parents, whether these deaf parents used manual language or not, and that the longer deaf children had been in an environment in which manual language was used the less impulsive they were. Harris O' Brien (1987) shows that whether they used spoken language or what she calls total communication (presumably including American Sign Language), deaf children were more impulsive than hearing peers. Evidence based on small numbers from this study shows that deaf children of deaf parents, who are assumed to have better language models from an early age, are less impulsive than deaf children of hearing parents. From informal observation of the hearing children in the study, Harris O' Brien concludes this may be related to the use of language to regulate activity. Fiebert (1967) examined field dependence/ independence in deaf children and considers that they were more field dependent than hearing children, although again, successful language users were more likely to be increasingly field independent. While these authors have examined communication methods as the most significant factor, Adams (2001) examined the effect of cognitive style on reading performance in relation to verbalisation and imaging in deaf children. He concludes that hearing impairment may affect the way in which a style is developed, with some 'verbaliser' children apparently doing less well on a reading test than 'imager' children, possibly because deaf children rely on visual information more than hearing children.

Martin et al. (2001) used Feuerstein's Instrumental Enrichment techniques with deaf children in England and China to teach metacognitive skills relating to parts-whole relationships, symmetry, projection of visual relationships, spatial relationships, following directions and classification. Enrichment was successful for these pupils, and unlike the visually impaired students, this was generalisable, with the development of metacognitive skills seen in other subject areas. Rubella syndrome is examined as possibly leading to syndrome specific impulsivity for some deaf children, but this is not proven or attested by studies (Harris O' Brien 1987).

#### **4.7.4 Assessing cognitive styles in learners with multiple needs including sensory impairment**

The term cognitive style is not often used in relation to the assessment of children with sensory impairment and multiple needs, although aspects probably relating to style may be discussed.

Sacks (1998) describes six key principles relating to what she calls learning style in students with disabilities additional to visual impairment: difficulties with generalisation, necessity for concrete rather than abstract learning, possible difficulties with attention span, modality preference, tactual tolerance and passive/active learning. She does not suggest how these might be assessed.

Langley (1986), writing about children with multiple impairments and visual difficulties, describes the value of a 'process oriented approach' in finding out about the child. She considers that such assessment may show the child's potential better than lists of successful and unsuccessful test items. She proposes that:

this type of assessment identifies how the students approach and process stimuli, the types of conditions, environments, materials and personnel that elicit maximum responses and an estimate of learning rate (p 254).

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She describes how the information such an assessment would yield would include:

specification of the student's learning style, primary learning modality, conditions under which he learned optimally, and learning rate; suggestions as to situations, materials, contexts and time frames which will elicit optimum performance (p 293).

Bond (1986a) describes an assessment for deaf children with multiple needs which encompasses behaviour and adjustment. Most of these items are also related to cognitive style constructs. The assessment items he proposes include:

- attention to task and on task behaviour,
- constructive perseverance on tasks,
- motivation,
- flexibility of approach,
- ability to learn from demonstration
- ability to learn from trial and error responses,...
- organisation of response,
- speed and accuracy,
- neatness....
- self confidence - relations to self,
- anxiety,
- attitude to correction,
- attitude to others, peers and supervision helpers (p 313).

### **4.7.5 Cognitive style and deafblindness**

There is little literature relating to cognitive style in children or adult learners with deafblindness, or even to those with profound and multiple learning difficulties. The journal *Deafblind International Review* (previously *Deaf-blind Education*) has never carried an article about learning style or cognitive style

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since it began publication in January 1988. Pease (2000) describes assessment of some factors possibly related to styles while writing about development of communication. Maxson et al. (1993) investigated how teachers of deafblind children chose their teaching methods. They demonstrate that few teachers assessed their pupils' learning style when trying to teach, and that they did not always choose the most effective methods in teaching. Others use the terms *learning style* or *cognitive style* without clearly defining them. McInnes (1999a) argues that:

the deafblind specialist must help the individual to develop a unique learning style (p 16).

McInnes believes that such a style will take advantage of residual vision and hearing, and of individual strengths, encourage curiosity, promote sensory integration, promote the setting of realistic goals (by the learner), build self confidence, and allow the individual to ask for assistance (p 17). In general these perhaps relate more to a teaching style than to a learning style.

Hampshire LEA's definition of deafblind children includes the term *learning style* although it is not clear in this context what this means:

a child (0-19) is considered to be multisensorily impaired when his/her vision and hearing is so severely affected that the impact on their cognition, mobility, orientation, personal and social development is such that they will have **unique learning styles** which demand individually designed and delivered programmes (my emphasis; Hampshire audit document, undated).

Curtis and Donlon (1985), without using cognitive style terminology, describe assessments of children with severe multiple handicaps, including those who are deafblind, through systematic observation in person or on video. These assessments aim to identify what may be some aspects of style, and could, they consider:

describe differences between two children at the same level, but who are quite different due to their rate and pattern of learning (p 114).

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Observation of the child during a learning activity would provide information about:

variability of things learned, rate and ease of learning, rejection of learning, reaction to reward and punishment (p 116)

and how the child responds to sensory input, and to people:

does he succeed best with those who point, gesture and sign more? Does he react best to those who demand more or those who place minimal demands? (p 118)

They also describe the benefits of examining natural learning (such as undesirable behaviours which have not been taught) to discover effective features of such learning. Curtis and Donlon consider that using individual learning factors will improve the child's ability to learn.

### **4.8 The importance of cognitive style for learning**

My primary interest in cognitive style is for the improvement of teaching and learning for deafblind children. Researchers in the field of cognitive style have also expressed the hope that applying understanding of cognitive style to learning situations may increase learners' success (for example Moran 1991, Sternberg 1997, Rayner & Riding 1997, Riding & Rayner 1998, Saracho 1999). There is as yet little understanding, despite the potential significance, of how this might relate to learning in individuals with sensory impairment. If cognitive style is fixed and relates to brain physiology, then deciding whether an individual is a verbaliser or an imager (one of Riding's key style dimensions, 1997) might help in the decision about whether a person with severe visual impairment should learn to read by braille or print. However, if styles are not fixed, then more effort could be made, as Warren (1994) and Witkin et al. (1971) propose, to develop more analytic styles for people with visual impairment.

Some assume that matching cognitive styles with styles of teaching would be beneficial for learners (for example Pask 1988, Riding & Dyer 1983, Babbage et al. 1999). Riding and Watts (1997) describe how children chose the type of material which they felt best suited them, and how this related to their

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cognitive style, but do not report how successful this choice was. Zhang asserts that adult learners achieve better if their thinking styles match those of their teachers (2000), and that in this case, their teachers are better at evaluating them (2002a). Some evidence contradicts this. Moran (1991) maintains that some studies (he mentions McKenna, 1990) show that there is not necessarily an improvement in learning when learning style is matched to teaching style. Other authors, primarily those working with adult learners, also argue that a challenge to styles may improve thinking (for example Armstrong et al. 1997, Curry 1983, Tennant 1988, and Entwistle 1987). They consider that the challenge of a mismatched style may lead to improvement in some learners (possibly those who are more mature?). Schmeck (1988c), referring to Kirby (1988), considers that encouraging learners to create a synthesis of styles will enable most efficient thinking. While such challenge may be useful for sophisticated learners, in terms of children who have profound difficulties with learning, Curry's proposition (1983) regarding adult learners has weight:

learning is difficult enough in itself, and should be structured to match the learner's style as closely as possible (p 5).

Wilder and Granlund (2003), using the term 'behavioural style' believe that a match between the child's style and the demands of their situation will maximise development opportunities for children with profound disabilities. Maxson et al. (1993) also consider it important:

to be able to match the learning styles of a particular deafblind person who is attempting to learn a specific type of task with a particular teaching method (p 261).

While the evidence is not conclusive, possibly the best guess at this time for children who are already educationally disadvantaged, is to discover the relevance of cognitive styles, and assess these, so that the best use of learning opportunities can be made. Although Moran (1990) may be correct, I am trying to improve learning. Given that there are differences in interpretation, it becomes more important to test whether, following Curry (1983) as above, matching teaching to the individual style of deafblind children will prove an effective way of improving learning.

### **4.8.1 Discussion**

This inquiry focuses on children who are deafblind, this population being outside the scope of the majority of research and writing in the field of cognitive style. The meaning of cognitive style terminology in relation to this group is debatable. While Riding (1997) argues that style should be independent of intelligence and personality, and relates to physiological differences, these criteria are less important, and probably not measurable in deafblind children. For teachers of these children, it is not important that cognitive style in the child is stable, unrelated to development, innate or impossible to teach, if it can be used to improve teaching and learning. If the existence of cognitive processing means the existence of cognitive style, then most deafblind children have cognitive style, and the investigations which follow assume that deafblind children who demonstrate learning are likely to have aspects of style. For children with severe impairments, it is possible that they realise and express their cognitive style (in fact develop it) as their cognitive skills develop; the evidence on development and change in style is not conclusive. Assessment can be used as often as necessary to re-check initial perceptions or to map the development of an individual's style. From a practitioner's point of view, the effectiveness of cognitive styles in enhancing learning is more important than the exact definition of the construct.

### **4.8.2 A model of learning style for this inquiry**

There is no single definition or even consensus on the use of the terms *learning style*, *cognitive style* and *thinking style*. This inquiry is about learning. Das (1988) argues that:

learning styles ... are simply cognitive styles applied when individuals go about learning something (p 102).

While recognising that the terminology may reflect more complex divisions, I shall use the term *learning style* rather than *cognitive style* from this point, to describe my area of interest. This is the individual differences in learning which are related to individual preferences in response to learning situations,

but are not identical to variables of age, measured 'intelligence', gender, or disability, although they may in some cases be influenced by these variables.

Although the psychological constructs at the basis of style may be distanced from the practitioner, this does not mean that assessment of such style is impossible or ineffective for this population. Riding (1997) proposes that style should be related to observed behaviours in learning and in social behaviour. Observed behaviours in deafblind children might therefore be used to assess style. Most definitions of cognitive style relate to *processing information or habitual responses* with the emphasis on the learner's activity in learning situations. Because it is not possible to judge the internal activity of deafblind children, I will use children's effective responses and preferences in learning situations to assess style. This inquiry will attempt to identify and describe the patterns of preference in learning in individuals who are deafblind. If such patterns can be identified, and the use of these preferences by teachers enhances learning, then some aspect of learning styles will have been demonstrated.

The literature on cognitive style describes many different measurements and even different syntheses of measurements, but I intend to examine aspects of style which are most likely to be visible and measurable in deafblind children. These are likely to be those which Curry (1983) believes are the outside of the 'onion' – (see 4.5) the instructional preference and the information processing strategies. Whether these relate at all to deeper metacognitive strategies I do not know, and the present inquiry does not aim to discover.

### **4.9 Conclusions**

The literature reviewed in this chapter has developed my understanding of the construct of cognitive style, and the relevance of this for deafblind children.

To the question:

- Is the concept of learning style relevant to deafblind learners?



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it proposes the answer that it is, because where cognitive processing takes place, it can be assumed that cognitive styles exist. The answer to the question:

- If so, is it possible to assess learning style in this population?

is more confused. There are no clear procedures or methods for assessing learning style in children with complex needs and sensory impairment.

Although some doubts still exist about what is encompassed by this concept and what is worth encompassing for this population, it is likely that assessments of learning styles will be valuable. There is some evidence from literature that assessment of learning styles may lead to improved teaching and learning, and this may also be the case for deafblind children. The next step of the investigation is to apply this understanding to practical classroom situations, to discover appropriate and practical methods for assessing learning style in children who are deafblind. This is attempted by a series of child based studies, which are described in chapter five.

## Chapter five

### **Developing methodology and methods for studying learning style**

“If there is no single and general method for solving the question of essence, our task becomes still more difficult: in the case of each different subject we shall have to determine the appropriate process of investigation.” Aristotle On the soul 1;1  
(McKeon’s edition 1973 p 156)

#### **5.1 Introduction**

The next major task in my investigation was to identify appropriate methodology and methods for enhancing my understanding of learning style in relation to deafblind children. The questionnaire had shown that there was no shared understanding of the concept of learning style for this population among well qualified and experienced teachers, and the literature review showed that there had not previously been an examination of these concepts in relation to these learners. However, it appeared that the concept of learning style and the possibility of assessing it might lead to the enhancement of teaching and learning for deafblind children. The literature had focused my attention on some aspects of learning style which it might be particularly appropriate to study, on two grounds; the way in which they could be investigated, and the possible relevance of these to sensory impairment and teaching and learning. I wanted to examine these in practice and discover whether and how learning styles could be identified in deafblind children, and what factors of style might be thus studied. This led to the child studies described in this and the following chapters (five, six, seven and eight). These studies were intended to provide evidence from practice to answer the questions:

- Is the concept of learning style relevant to deafblind learners?
- If so, is it possible to assess learning style in this population?

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- Can such an assessment be used to improve teaching and learning?

This chapter describes the beginning of a series of studies undertaken with individual deafblind children and their teachers. The studies fell into three phases (see below, 5.1.1). Initially this chapter explains how a methodology relevant to this inquiry and the population on which this inquiry was focused was developed and then outlines the choices made while developing appropriate methods for the studies. This search for a suitable methodology was prompted by the question:

- Is case study methodology appropriate for studying deafblind children as learners?

Using case study in this way also raised issues concerned with the ethical values of the research which I have considered to address the question:

- What are the ethical issues for this population and how can they be resolved?

This chapter then goes on to describe the pilot study in phase one (5.7. and following).

### **5.1.1 Phases of the investigation**

The investigation into the learning styles of deafblind children described below was carried out in three phases, as shown in table seven.

**TABLE 7 PHASES OF THE CHILD STUDIES**

	Methods involved	Names and numbers of children	Chapter describing study
Phase one; Pilot study	Assessment document, interview	Phoebe (1)	Chapter five
Phase one: Exploratory studies	Taught task, interview	Usha, Caroline, Grace (3)	Chapter six
Phase two	Taught task, interview, second task	Satya, Alice, Nolunthando, Debbie, Helen (5)	Chapter seven
Phase three	Taught task, interview, second task, records examination, observation	Ruth, Shula, Siobhan, Kate, Fallon (5)	Chapter eight

The first phase included a pilot study, which explored learning styles broadly, but with insufficient focus. It used an assessment document and a teacher interview. The exploratory studies aimed to discover whether a single aspect of learning style (prompt modality preference) was meaningful for this population, and whether this could be assessed, using a taught task and a teacher interview. The second phase examined prompt modality preference and used a taught task and a teacher interview, but included a second task, designed to investigate the usefulness of the evidence on learning style. The third phase included a wider range of aspects of style, and used the taught task, second task, teacher interview and additionally, written records and direct observation to gather information.

## **5.2 Methodology; a case study approach**

The overall purpose of this inquiry, through all three phases of child studies, was to discover whether the concept of learning style could be relevant to deafblind children. This was initially focused on prompt modality preferences. I also aimed to determine whether the assessment of individuals in relation to learning style might yield valuable information which could improve learning and teaching. I wished to identify practical methods of using this concept to inform and improve teaching. Whilst there was clearly some interest in

whether and how the concept might relate to children at early levels of development, the theoretical and abstract underpinnings of the ideas were of less overall significance. While the learning styles which I sought to identify might not be equivalent to those proposed by some theoreticians, they had value in this context. The case study methodology was used for all three phases of the child studies and the issues described here relate to all these phases.

There were several factors which influenced the choice of methodology for this inquiry.

### **5.2.1 Child based factors**

As has been argued and established in chapter one, deafblind children are a heterogeneous group, with little in common except a dual sensory impairment. Dual sensory impairment also appears in different degrees and combinations of vision and hearing impairment. Deafblind children attend different types of schools and follow different types of programmes. They have different cognitive and communication resources. Some very specific issues were considered in deciding a framework for this inquiry.

Firstly there are few dual sensory impaired children in the UK. With a possible incidence of only four in 10,000 children (Derbyshire Consortium 1995), it would be unlikely for logistical reasons that I would be able to study directly more than twenty children. This placed limitations on the practical development of inquiry methods, because children and their teachers could not be part of both the development and the actual investigative procedures.

Secondly, as described above, children in this group are very individual. Each child has features which distinguish her from other members of this group, but are essential to understanding her as an individual. These include educational background, additional disabilities, and communication methods. It would not be practical to find children who shared all the relevant variables.

Thirdly, many of these individual features are due to useful and interesting differences between children, which need a fuller description. The children

needed to be studied in depth to ensure that the significance of these differences is appreciated.

Fourthly, this group already find it difficult to learn. The research methodology and the methods developed from it need to acknowledge this and be undertaken in ways which are as minimally disruptive as possible to the children.

### **5.2.2 Researcher factors**

The inquiry had to be one I carried out largely myself. I did not have access to assistants or to many resources. I was also a practitioner in the area of deafblindness, and the inquiry needed to balance the benefits of this involvement in practice with the disadvantages it caused, such as the need for confidentiality. I had to be able to carry it out with some efficiency as an apprentice researcher, while developing my understanding of research techniques.

### **5.2.3 Field factors**

The development of professional understanding of deafblindness in the UK is relatively young, and research with this population is minimal (but see 5.2.5.2.). Much literature in deafblindness is based on individual anecdote or impression (see for example, Pappa 1999, Rodriguez-Caicedo 1996, Best 1998, Wolff Heller et al. 1995, Ford & Fredericks 1995). There is a need for the development of inquiry approaches which encourage evidence-based research with deafblind learners.

### **5.2.4 The nature of the questions for the child studies**

The inquiry addressed questions which had not been examined in depth previously. The questions were exploratory (Robson 2002), based on the broad issues of whether learning styles could be observed in this group, and how they could be assessed and for what benefit. The children involved in the studies could be compared to each other as individuals to highlight individual differences, but there was no intention to show that there was a single

consistent pattern of learning style in deafblind children, or that all identified styles were identical or equally significant.

## **5.2.5 Case study as an appropriate methodology**

### **5.2.5.1 ‘Disciplined enquiry’**

The inquiry needed to be a ‘disciplined enquiry’ (Shulman 1988) as described above in 1.5 where:

observations are collected, evidence is marshalled, arguments are drawn, and opportunities are afforded for replication, verification and refutation (p 4).

As Shulman argues, this does not necessarily mean that it should take a quantitative, positivist approach. There would be no typical group of deafblind children who could represent the rest of the population (Kellet 2000). Groups could not be compared with each other because there would always be too many variables. The numbers of children involved meant that data would not yield statistical significance. More importantly, the case studies needed to examine individual children in depth, and provide a richness of possible information about a few children which would probably be missed in a rigid or fixed design (Robson 2002).

This is especially likely to be of benefit in an inquiry in a new area of knowledge, as this was. It was important that data, details and factors which might be significant even if they do not apply to every member of the studied group could be included. The ability to ask about ‘anything interesting’ even if this falls outside the framework (Murdoch 1994a) allows the inquiry to be relevant, despite the heterogeneity of the population of children who are deafblind. Seeking a wide range of information is especially important because the children in these studies were not able to use language to express their own opinions of the issues. Unlike most case studies, no autobiographical data can be included, nor the points of view of the individuals at the centre of the study obtained. The inquiry can be rigorous, extensive and reflective, while also related to the needs of the pupils and their teachers, not subjugated to a research process which does not fit with its demands.

### **5.2.5.2 The research context of the case study**

Some systematic research has already been undertaken by case study, where the descriptions of individual deafblind children develop and illustrate hypotheses (Murdoch 1994a and Murdoch 2000). Case study information has also been used to explain, expand and corroborate other types of data (Porter et al. 1997). Authors in the field of complex disability and sensory impairment have also based their work on case study data (for example Nind & Hewett 1994, Watson & Knight 1991, Preisler 1995, Morse 1992). While appropriate collection of data for this group remains difficult, as acknowledged by Murdoch (1994a) and Curtis and Donlon (1985), a case study approach allows comparison of methodology with others in the field. This assists in the development of effective procedures which is a clear need in evidence-based work concerning deafblind children. The study of individuals in a rigorous case study framework is not merely anecdotal, but provides 'data, arguments and reasoning' which can be examined and evaluated by other members of the educational community (Shulman 1988). It allows for specific, measurable and verifiable data, which is also detailed, explanatory and exploratory (Verma & Mallick 1999, Hitchcock & Hughes 1995). Stake (1995) describes two types of case study, intrinsic studies, where the individual case itself is the chief focus, and instrumental studies, where the case studies are used to illustrate the main issue. This inquiry is an instrumental study, where the issue of learning styles is explored in several individual cases (Bassey & Pratt 2003).

### **5.2.5.3 Generalisability and the case study**

One of the perceived problems with case study is its lack of generalisability; that is, the results of the study of a few cases can only be relevant to those cases. Some authors argue that no groups can really be presumed to represent others, and quantifiable data from selected samples is not generalisable (for example Wellington 2000, Johnson 1999, and Shulman 1988). What is true of a sample may not be true of one individual, particularly in a population with wide variation (Donmoyer 1990). The issue of what case study research can mean for those who were not the 'case' must be considered. Shulman (1988) says that generalisability depends on the



question being addressed; and whether the question relates to ‘the common elements or regularities’ (p 8) shared by the group, whatever their differences.

While a multiple case study design, where the data pertains to more than one child, is less usual, in this case it addresses the relevant questions. The individual data gathered will be valid and reliable for the child to whom it relates, but it will allow analysis which is both relevant to the individual and illustrates the inquiry as a whole, as proposed by Corrie and Zaklukiewicz (1985) who were able to:

describe individual cases and to arrive at a general statement about the issues common to several cases (p 127).

The collection of evidence about a number of individual cases allows also for the formulation of more general hypotheses, which, while not studied here, may lead on to further work in this field (as shown by Wellington 2000), and adds to the richness of the data eventually collected (Donmayer 1990). Where sufficient description is given of the collection and analysis of data, and the conditions and individualities of the children who were a part of the studies, other professionals and those interested can judge for themselves to what extent it is representative of the learners, teachers, or situations they know (Hitchcock & Hughes 1995, Stake 1988).

#### **5.2.5.4 The case study benefits for the practitioner**

It is hoped that the results of this inquiry will ultimately assist teachers in assessing the learning styles of deafblind children and using them to plan teaching. Because the population of children identified as deafblind shows as many differences as similarities, some teachers may reject results based on generalised evidence on the basis that it is unlikely to reflect the needs of the children they teach. The use of case studies enables practitioners to recognise common factors and to see how far and in what ways the results are applicable to their situation. It is evidence grounded in practice, developing from teachers’ experience in the inquiry. The data and the conclusions are therefore more likely to be valued and understood by others

working in this field (Ruddock 1985). It ensures the accessibility of the inquiry to practitioners (Walker 1993).

#### **5.2.5.5 The case study benefits for the researcher-practitioner**

As a practitioner, using case studies allowed me to gain maximum benefit from my close knowledge of some of the children and the teachers involved in the studies, while not disrupting the children more than necessary by working directly with them (see below, 5.6.3). I was able to use multiple sources of information, and was more able to respond to individual needs. I could choose a 'purposive sample' (Robson 1993), rich in information and illustrative of the population and the issues I wished to investigate. I was sensitive to classroom needs, and able to be an 'observer participant' (Hammersley & Atkinson 1983, cited in Wellington 2000) of children. The supportive and advisory nature of my work in two settings may have increased the number of staff who were willing to be involved and the commitment they were prepared to give.

#### **5.2.6 Designing a study; determining methods**

The case study methodology is defined by Robson (1993) as:

a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon with its real life context using multiple sources of evidence (p 52).

These sources may include interviews, review of documentation and records, observation and assessments (Robson 1993, Verma & Mallick 1999). This inquiry was exploratory, asking questions and seeking new insights, assessing phenomena in a new light (Robson 1993), and used a variety of methods to answer initial and developing questions. The methods themselves developed to reflect the changing nature of the inquiry and my increasing knowledge and understanding (see 5.1.1. above). Different methods increased the total amount of data collected, so providing greater opportunities for seeking consistency and developing interpretations.

### **5.3 Trustworthiness of evidence**

There are concerns about the trustworthiness of evidence based on case studies (Robson 2002). In quantitative research, tests of validity and reliability address the concerns of the effect of the researcher on the evidence collection, and the difficulty of providing alternatives or tests for evidence produced by objective means. Validity pertains to the accuracy of data in reflecting the researched situation and reliability to the durability and replicability of the evidence (Hitchcock & Hughes 1995). Robson (1993) proposes that concepts of credibility, dependability and transferability may be better used to judge the value of qualitative research. In broad terms this section addresses the question of whether the research is trustworthy.

#### **5.3.1 Credibility**

The studies described below were designed to assess learning style (a pattern of preferred learning) in a group of deafblind children. It was not expected or intended that the results would show the same style in all individuals, in fact differences in results would indicate that the method was showing style, not simply reflecting the assessment method. The structured taught task which was used in some phases (see table seven) was the same for each learner and in the second and third phase studies teachers were given specific training in using this task. In the second and third phase studies, the identified features of learning which I have called style were used in an attempt to improve teaching and learning.

For deafblind children many factors influence classroom performance, and assessments were carried out over several days to minimise the possibility of a single occasion being atypical of the child's performance. The approach used made typical behaviour more likely because assessment tasks were also made as far as possible a part of the child's typical classroom experience. They involved the same settings and people, although unfamiliar techniques and equipment were used. The structure of the taught task (from the exploratory study onwards) was developed to allow the child's actions to override the teacher's preconceptions. That it successfully did this is shown

by the fact that the taught task sometimes showed different preferences from those the teacher described. The studies also have content validity (Robson 2002), that is, they were structured to answer the questions I was asking. They developed alongside my growing understanding, and while the pilot study probably did not sufficiently cover the relevant aspects, the exploratory studies improved on this, and the second and third phase studies were able to expand on it (McCormick & James 1983). Finally, no solutions that did not involve case study seemed to be suitable.

The detailed description of questions, assessments, observations and other aspects of the inquiry allows others to judge whether these methods were appropriate to identify learning style or not, and the route travelled to reach the interpretations is laid out so others can follow it if they wish (Mason 1996 cited in Robson 2002).

### **5.3.1.1 Use of multiple sources of data**

The use of multiple sources of data to support and inform each other adds to confidence that the inquiry addresses the questions it was intended to. In the phase one and two studies I used interviews and the data from the assessment; in phase three observations in the classroom and examination of documents were added to the evidence. These sources of evidence allowed for:

- 'data triangulation': evidence from more than one person, or time
- 'investigator triangulation': the use of different perspectives, those of teachers, another observer and my own
- 'methodological triangulation': the use of more than one method of obtaining information

(Denzin 1970 cited in Hitchcock & Hughes 1995).

These sources used together support the building of an increasingly accurate picture of a child's learning, using different perspectives to explore the issue being investigated. Such corroborative evidence can:

support or contradict the interpretation and evaluation of a state of affairs (Eisner 1998 p 110).

Evidence which contradicted other sources could be particularly valuable, indicating perhaps that what was generally assumed about a child might be wrong (see the example of Siobhan and novelty, in 8.4.2.4.1). In the phase three studies the sources of information were deliberately expanded to include perspectives of other people in addition to the current teacher, and include past records of up to 13 years so allowing other perceptions and preconceptions to be considered. Since the children could not be asked, the inclusion of a variety of interpretations may have assisted in constructing interpretations reflecting also the child's point of view.

### **5.3.2 Dependability**

This refers to the qualities of the inquiry which allow for the data to be checked (Robson 1993). This report of the inquiry provides sufficient detail and structure for similar work to be carried out elsewhere. The use of multiple case studies demonstrates the value and usefulness of the methods when applied to children with different degrees of disability and at different times, in different settings and by different people.

To ensure that interview transcripts recorded what the teacher had intended to say and enhance validity, transcripts were always given to the teacher for checking, so they could add other comments. Robson (2002) describes this as 'member checking' (p 175).

#### **5.3.2.1 Use of video for inter-observer reliability**

Some specific measures were used to check the dependability of the studies. The use of video during the taught task element of the studies and the classroom observation provided an opportunity for a second or third person to observe a session relatively unobtrusively and allowed for checking and

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matching of observations (McCormick & James 1983). It enhanced validity by providing a further source of evidence to support the teacher's recording. Video recording is a powerful tool in allowing more objective observation, and access to data by more than one person (Curtis & Donlon 1985). It can be stored permanently and observers can look at it many times, or frame by frame to observe small responses:

For learners with multi-sensory impairments, who may show slight or unpredictable responses to stimuli, video recording is an enormously useful tool (Murdoch et al. 1994 p 20)

However, it only provides a visual and auditory record of what is happening; the observer is not able to feel the movement responses of the child, which can be very significant for children with such severe impairments. The process of video recording itself may affect the behaviour of both adult and child, even if they appear to be familiar with cameras and equipment, and what is seen in a video may not represent entirely typical behaviour (Tilstone 1989, McCormick & James 1983). There are particular dangers in over-interpretation for observers who were not present when the video was taken, and cannot feel the mood.

In addition to this difficulty, there were some specific difficulties related to this inquiry. One was related to the prompting schedule used in the exploratory studies and phases two and three – see 6.4.1. Some teachers found it difficult to use the schedule strictly, and observers could not always see when one prompt event finished and another began, and sometimes missed records. A more significant difficulty was that the teacher, knowing the child well, might observe something which was not recognised by those less familiar with her. For example, even an apparently simple behaviour, such as *looking* may not be easily recognised by someone else, if the child uses unusual visual behaviours. Using peripheral vision to locate something while appearing to look away is common for children with cerebral visual impairment (Crossman 1992). For some prompts the teacher manipulated the child's hand through actions. This made it difficult for the teacher, and still more

difficult for the observer, to distinguish the child's response to such prompts from the prompt itself. The teacher however might feel the child's guiding movements through her own hand. These difficulties were discussed with colleagues including Professor A. Wing who is involved in research with experimental subjects into measurement of touch, but no resolution was found (Wing 2001).

#### **5.3.2.1.1 *Inter-observer reliability measures***

It was intended to use video during one of the teaching sessions for each of the thirteen children involved (after the pilot study) although in fact due to absence of staff and children, only eight videos were taken, two of one child. One of these was of no value for analysis because the child completed the task within moments (Shula).

One video (of Siobhan) was taken during a classroom observation in the third phase studies (see 8.2.2.1.), and this was analysed first. A second professional (experienced in watching deafblind children) and I watched twenty minutes of the video. We each recorded the number of tactual, kinaesthetic, vibratory, olfactory and auditory prompts. No visual prompts were seen; Siobhan is considered by her teachers to have no useful vision.

The total numbers we had each recorded for the types of prompts were then compared. Overall, 79 events were recorded by the first observer and 83 by the second observer. In each separate category, the two observers agreed or differed by only one for 80% of the numbers recorded (for example, twenty one kinaesthetic prompts seen by one observer, twenty by the other). The remaining 20% were within three of each other. A table showing these outcomes is in appendix five.

Video evidence of the taught task in phases one two and three was analysed later. A second person, also a professional with experience with children with SEN, observed the session on video, and recorded responses on the same schedule the teacher had used. These two records were then compared by a third person, a professional in the field of multiple disabilities, to decide whether each record substantially matched. Of the seven videos, overall

average (mean) scores of 86% agreement were reached, with a range from 100% to 58%. In the case of the lowest match, 58%, there were only seven events recorded by the teacher and the observer. Where the number of events is small, the numbers of chance disagreements are not evened out by many higher scores, and it is harder to obtain high measures of agreement. Considering that the largest number of events for these records was 11, the levels of agreement are high. Tables illustrating these agreements are shown in appendix five.

### 5.3.3 Types of evidence gained during the inquiry

The child based studies in three phases used different methods and different sources of evidence. These sources of evidence were: an assessment of prompt modality preference, an interview, an observation, examination of documents, and a second taught task. Each is described as it occurs in this report. Table eight shows the development of methods through the three phases.

**TABLE 8 DEVELOPMENT OF METHODS**

<b>Phase</b>	<b>Methods in this phase</b>	<b>New developments in this phase</b>
Phase one; Pilot study	Interview Assessment document with taught task	Interview Assessment document with taught task
Exploratory studies	Interview, Taught task and redesigned record sheet with focus on prompt modality	Redeveloped taught task with new record sheet
Phase two	Interview, taught task, second task	Second task
Phase three	Interview, taught task, second task, classroom observation, review of documents	Classroom observation, review of documents

## 5.4 Ethical issues

Verma and Mallick (1999) believe that ethical issues are of even greater concern for case study research, because case study is so 'personal'. Ethical



issues were a significant concern to me while preparing and carrying out the inquiry. The inquiry required direct contact with children and their teachers in their schools, and involved four groups of people other than me, the researcher:

- dual sensory impaired children
- their parents
- their teachers
- other staff working with the children and teachers.

At different stages of the inquiry, different ethical issues were prominent. At the planning stage the major issue involved consent; at the intervention stage it was costs and benefits to participants, and respect for individuals; and in the writing up stage it was anonymity and the responsibility to tell the truth.

### ***5.4.1 Consent***

#### **5.4.1.1 Staff and schools**

Appropriate permission was sought from parents, teachers and school management for each child/teacher pair who would be involved in the research, by letter. The letter, which was modified for the different groups, included details of what I hoped to do at each phase, for example, the letter at phase three included access to records whereas in other phases it did not. An example of a letter seeking consent is in appendix six. Initially I approached the relevant senior managers (for example, the head teacher, the head of the unit), by letter, and usually followed this with a discussion, in person or by phone as recommended by Hitchcock and Hughes (1995). If and when permission was granted from the appropriate senior manager, I approached the teacher herself; initially by letter and then to discuss the demands of the study in terms of time, materials and settings, and any other issues she wished to discuss, as recommended by Powney and Watts (1987). Teachers were asked to give written consent to taking part. As I have already said, I sought teachers who were 'information rich' sources (Gall et al. 1996) for a purposive, not a random sample. Therefore teachers I judged to have less

confidence or less specialist education or those currently working in very stressful situations were not asked to take part. Teachers who expressed sustained doubt (following an initial discussion) were not pursued for consent to take part. Those who did return permission were more likely to be interested, informed teachers.

### **5.4.1.1.4 Observation**

In the third phase of the studies, I carried out direct observations of the child in the classroom. In each case, I discussed this with a member of senior staff and the teacher beforehand, and agreed a suitable day with class staff.

Observation of children by non-staff adults was a frequent occurrence in all the schools. However, there are a number of issues raised by the observation of children who have complex needs and the way in which this affects them and the staff they are working with. Tilstone (1998a) mentions the importance of the observer's 'right to tell' or rather, the necessity that observed information is used to the benefit of the child. In most cases, I knew the staff involved.

This may have made staff feel more comfortable (they knew me, understood my expectations and my approaches) but may also have influenced their practice (for example they may have believed that what I saw would affect our future work, or they wished to impress). I asked class teachers to discuss the observation with all staff who would be with the child during the observation, but the number of people involved and the minimal involvement of some of them meant that formal consent by letter was not used. I introduced myself wherever possible to the staff as they arrived and explained my role briefly. Members of the classroom team were always invited to look at my records relating to the child they were working with.

## **5.4.2 Children**

### **5.4.2.1 Consent and assent by children**

The children involved in the inquiry had no formal language skills. Where they did have some skills in communication they would not understand the concept of formal consent, so this was not sought. Such token consent would be worthless and meaningless. The children were involved primarily because

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their teachers and parents had agreed that they would take part. Although working in partnership with people *with* learning disabilities, rather than *for* them is preferable, I knew of no way to involve these children in planning or evaluating this research (Kellett & Nind 2001). Stalker (1998) in her thorough discussion of involving people with learning disabilities in research was able to say no more than:

very few studies... have succeeded in eliciting the perceptions or feelings of people with multiple or profound impairments (p 5-6).

However, it was important to give the children choice where they could exercise it. Choice only requires understanding of the moment, and is not the same as having a standpoint on an issue (Ware 2003). For example, they could protest their role in the research by objecting to the procedures of the assessment task. The issue of *assent*, the child's co-operation and comfort, was deliberately discussed with teachers as part of the conversations about the task. If a child rejected the task or protested, the teaching should be abandoned (Cohen & Manion 1994). The adults involved in these tasks knew the children, and could interpret communication cues, to ensure:

the ongoing consenting status of the children (Kellet & Nind 2001 p 53).

In this way the children could be said to be giving assent to the procedures. For other parts of the study, for example the fact that I saw their school records, I could not identify similar means by which they could protest.

However, the project might also be of benefit to the children, if, through discussion with their teachers, and examination of learning styles, the teaching environment became more attuned to their needs. To limit research in the field of individuals with complex needs only to those who are able to consent and to be involved:

brings with it the danger of omission in research of those with the greatest disabilities (Kellet & Nind 2001 p 51).

The dilemma of involvement without consent from the participant but with benefits for the participant is not easily resolved. I took the steps advised by

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McCormick and James (1983) and asked parents for their permission, but this is a compromise of the children's individuality, perhaps a necessary one. I asked for written permission, again through a letter, from the parents of each child I wished to involve. Parents were sent an outline of the study, a description of what it would involve for them and their children, and were invited to contact me if they required further information. The information explained that the children would be engaged in tasks similar to those they usually did at school. In different phases, it explained as necessary taking video, looking at records and other methods. The fact that some parents knew me, or at least my name as a professional involved with their children, may have encouraged them to give this permission.

There is no ethical committee or body to examine the proposals of educational researchers (Pring 2001), as there is, for example, for health service professionals. However, in line with guidelines issued by professional bodies in Britain and the USA (American Psychological Association 1981 cited in Herbert 1990, British Psychological Society 1993, British Educational Research Association 1992 both cited in Butterfield 1996), parents and staff with whom I had regular and professional contact were assured that there would be no change to my professional role in respect of them or their children were they to decline to take part in the study or subsequently to withdraw. I recognise that some teachers may have felt obliged to assist me. For example, although some of the teachers did not work in schools I visited as part of my work, the project was suggested to them by a member of their management team. Some of the teachers worked directly with me or where I had some professional management responsibilities, although I was not the line manager of anyone asked to be in the study. Teachers were told that they had the right to refuse or withdraw without a reason, and three teachers were not sufficiently positive and I did not pursue the matter.

### **5.4.3 Costs and benefits**

Vaughn and Lyon (1994) describe four ways of ensuring that an inquiry respects the rights of the child taking part:

- respect for the child as an individual
- consideration for what the child gains from participation
- minimizing stress or undue attention
- respecting children's right to refuse (p 326)

I now relate these issues to both the children and the teachers who took part in the studies.

#### **5.4.3.1 Respect for the child**

The costs and benefits for the child, the central and most vulnerable participant, and the teacher, also an essential participant but generally less vulnerable, were appraised. As described above, consent was not sought directly from the children. Part of the justification for this is that there were no significant risks of danger or harm for the children taking part. The seeking of detailed and highly informed consent should be balanced against the risk of taking part for the individual (Frankfort-Nachmias & Nachmias 1992 cited in Cohen & Manion 1994). Where the risk is low, the need for such detailed consent is also lower. However, it is essential that work involving children must securely protect the child's interests, and steps should be taken both to ensure that at worst there are no negative consequences for the child, and that there may be positive ones. This is particularly the case when children are not able to give even the simplest of consents to the work undertaken.

Deafblind children with no formal language would carry out activities directed by their teachers as part of this study without being able to make a choice, as they would for most school activities. Only to a limited degree are they able to protest or to reject activities chosen by their teachers, and perhaps suggest their own choices.

However, the children whose parents and teachers I asked to take part were deliberately chosen as those I considered as secure, who were not at present under any particular stress such as ill health or staff change. Where I was made aware of current problems for children I did not pursue permission for them to take part.

For all the children, information which was seen or given but was not related to the issues of the inquiry was disregarded or excluded. Personal information beyond that most relevant, such as impairments, age, and school history was not used. When children were observed, this observation was not undertaken in situations where it might compromise a child's dignity or privacy (either that of the child being observed or another child) so I did not enter bathrooms or changing areas (Baker et al. 2000). Staff were asked (usually via the class teacher) to request that I leave if any situation arose where they would prefer that I was not present.

I discussed the examination of records with a senior member of staff, suggesting that statement advice and statement review documents might be suitable for this purpose. Although they are not public documents they are usually widely circulated and matters of a personal or secure nature are rarely included. I followed the school's advice about where and how to look at records, usually working in a place where I could be seen by other staff. I was scrupulous about only including material thus offered to me, even where I knew the children and had professional access to other documentation about them. Of course such information may have unconsciously influenced my judgement.

### **5.4.3.2 Respect for the individual; teachers**

The questions in the interview related to their careers and to the child they were working with. Copies of transcripts of interviews were returned to teachers, for any comments they wished to make, to ensure that the interview represented them as they would wish. Three teachers added extra details to their statements at this point.

During the observations in phase three, I asked each teacher if there was something they would like me to observe and comment on relating to the child, while I was observing. Two teachers asked me to do this.

### **5.4.3.3 Consideration for the child's gain**

Broadly, the children may be considered to be unaware of the project, or its results. The taught tasks used in the exploratory studies, and in phases two and three, required teachers and children to work for five days on agreed tasks taking ten or fifteen minutes a day. The task directed the teacher and imposed a particular style. This, combined with the fact that it was intended to show significant progress in a very short time (five days) meant that the tasks themselves were artificially constructed. The skills chosen did not have an intrinsic value in teaching and learning and were not part of the child's curriculum. This was time when they could not be learning anything else, and they were expected to learn slowly (QCA 1999). However, the task took only a short time, and the identification of learning styles might be expected to lead to better teaching and more successful learning for the child. Some children continued to work on a second task for up to fifteen days; this task where possible was embedded in the child's routines and was considered to be of value in itself. The opportunity to focus on the development of one child might also be of benefit to the child and the teacher. The results and conclusions from each study relate specifically to the individual child who took part. Although some general trends and information may be deduced (for example, that learning styles can be described in deafblind children), the results of the study were expected to benefit primarily the individual. Although results for individuals might have different relative values, depending on how much evidence was available, no child was included purely for the benefit of other children. Tasks were planned to include things the child would be expected to enjoy. In many cases a small toy or piece of equipment which the child had enjoyed was left with the child following the study.

#### **5.4.3.4 Consideration for the individual's gain; teachers**

There were some potential benefits to teachers (and hence possibly to schools) from taking part in the inquiry. Some welcomed the opportunity to discuss a particular child, at some length and in depth, with another interested and experienced professional. The involvement in the project might also be an opportunity to explore ideas of their own about research or other ideas about deafblind children. It might inform their own teaching of this one child and of others. No particular incentives (save a packed lunch!) were, however, offered to the teachers.

#### **5.4.3.5 Minimizing stress/respecting children's right to refuse**

For children there were few risks. If the work distressed them it would be stopped. Because they appear unaware of their own situation, they would not feel uneasy about undue attention being paid to them (Vaughn & Lyon 1994). To minimise disruption, I chose to work primarily through the children's teachers, rather than to involve another person (as discussed below in 5.6.3).

Working through a teacher was likely to lessen any possible distress caused, for example, by the unfamiliar equipment and unfamiliar teaching style used in the taught task. As described above (5.2.4.1.) an adult who knew the child was there to allow the child to protest and to decide to end the activities.

However, it remains the case that the children were not able to give informed consent. I explained that this aspect of the project was not as important as the wellbeing of the children involved, and that any child who protested should be allowed to stop. Some children were withdrawn for some parts of the days, because of such distress.

#### **5.4.3.6 Minimising stress; teachers**

Teachers could choose whether to take part or not, or to withdraw at any time, although none did withdraw. On occasion, teachers did not complete the record sheets, for example, as had been planned, but they were not asked to repeat work they had done, or to explain it in different terms. Because involvement in the task meant extra work for them, any contributions that were made were accepted as they were.



### **5.4.4 Dissemination**

#### **5.4.4.1 Anonymity**

I explained to the teachers, schools and parents that the project was intended to be a research study. The exact nature of dissemination which would follow was not decided, and so this was not stated. It was made clear that no names of children or staff would be used in writing up or reporting the inquiry.

However, the professional field of deafblindness is fairly small, and staff working in the field will know other establishments, staff and children, possibly quite well. Therefore it is possible that despite anonymity children and schools and services could be identified. The degree of anonymity should be related to the numbers of people likely to read certain presentations of the work. Those who worked with me already know their identity. Those in the schools I worked with also know and will probably recognise children and teachers they know. The relatively few people who will read this doctoral thesis may also have a significant interest in deafblindness in the UK, and may know me, the work I do and the children I work with, but wider dissemination, to an audience outside this very specialist area, should take greater pains to protect identity.

To preserve as much anonymity as possible, few details are provided about children. Only essential details such as their hearing and visual status and ages are linked to them. Only the SEN category of their schools is given. Although some interesting detail may therefore be absent, the discussions of the children do include most of the relevant factors. The presentation of the information sometimes deliberately obscures which participating child or teacher is discussed, again to protect identity (Cohen & Manion 1994).

More significantly, all the participants in the studies, both adults and children have been described as female, with the deliberate intention of obscuring identification. Although I recognise that the gender of the children (and possibly the staff) could be a relevant variable (for example Saracho 1997), this was not investigated by the inquiry, nor were any conclusions drawn about differences between girls and boys, or men and women. The small

number of participants in the studies and the many differences between them, particularly between the children, would make any comparison on the basis of gender very tentative indeed. I believe that representing them all as female is likely to significantly reduce the possibility of identification for some of the participants, and such identification was a significant risk, as discussed below.

Most of the staff I worked with while undertaking the child studies were teachers. Some however were not trained teachers and had other designations such as teaching assistant or intervenor. Once again, to avoid identification of the children and the staff, all the staff are referred to as teachers, except where educational provision is explicitly described.

Likewise, the ethnic origin of the pupils or teachers was not formally recorded. Although this could be a relevant factor, no investigation of its relevance was made. The pseudonyms used for the children are broadly representative of the ethnic mix of the children, but are not individually representative of the ethnic group of particular children.

Despite steps taken to promote confidentiality, I still believe that it is quite likely that some pupils and staff will be identified, because of the very small size and specific nature of this group, the small number of teachers and settings, and others' knowledge of my responsibilities. Naming of such features in relation to the children as 'working with an intervenor' or 'attending a grant maintained school' contribute to recognition of individuals and establishments. I have myself read research reports called anonymous in which I was able to identify participants. As Cohen and Manion (1994) argue:

there is no absolute guarantee of total anonymity as far as life studies are concerned (p 367).

Letters to both parent and teacher participants did not say that the work would be totally confidential. It said only that names would not be published, but that some other details, such as age, and types of school would appear. No promise of confidentiality that could not be kept was made.

Another possible approach to this would have been to seek permission to use actual names for all the children (from parents) and teachers (from

themselves) in the report. However, this could have resulted to increased limitations on the number of people willing to be involved, and furthermore, there is no obvious limit to whose permission should then be sought, heads, other staff in the classroom, local education authorities, as well as the fact that the children's permission could not be obtained.

Some readers may still be able to identify individuals, and this raises an issue in relation to reporting teachers' work. It becomes very important to ensure that the work of those staff who generously supported the inquiry is not shown in a negative light, which is called 'betrayal' by Cohen and Manion (1994). Examples of this problem might be where a teacher said she had not used any assessments, or where the observational data was greatly opposed to the data collected by teacher interview.

The fact that attempts have been made to disguise identity also means that the teachers who contributed to the studies were not able to gain any credit for their co-operation. Their names are not even acknowledged, although I do recognise that these studies could not have been done without them, that some of their contributions were very significant, and that all of them made efforts to assist me (Vaughn & Lyon 1994). The balance of costs and benefits indicate that the pursuit of anonymity is the correct course, but it is not without drawbacks.

Not many such problems or apparent problems have yet arisen. They have been approached by including additional information (such as the teacher's reasons why they have not undertaken assessment) or making it clear that problems in filling in record sheets are due to me as the researcher, who should ensure that the records are accessible and simple to fill in. It is quite proper that the researcher should be judged by her work, but not that those working with her should be.

### **5.5 Working with children and teachers; choosing children**

Fourteen children and young people and the staff who worked with them day to day in their classrooms were involved in the studies. These children and young people were all dual sensory impaired, in accord with the definition in

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1.6.1.1. They had different degrees of sensory impairment, different additional impairments and different levels of cognitive functioning. They were not chosen to compare directly with each other, nor to be representative of the population of deafblind children.

The children who took part in the inquiry all had sensory impairment from birth; all but one, congenital dual sensory impairment. One child had Usher syndrome and deteriorating vision. Two other significant criteria, communication ability and object manipulation, were used to choose children and there were also practical considerations.

I considered that some methods for assessing learning styles in typically developing children, if carefully adapted and sensitively delivered, could be used with some deafblind children who had good use of expressive and receptive language. Similar assessments for achievement and style had been described, for example, by Bond (1986a) and McInnes and Treffry (1982). The problems would be different for the many deafblind children who do not have formal language.

Rowland and Stremel Campbell (1987) propose a hierarchy of communication development which describes formal language as children's use of symbolic, rule bound forms to express themselves. This inquiry excluded children who had reached the level of formal rule bound language. Some children who used single signs or symbols were included. They would not have been able to understand and therefore to undertake procedures designed to be explained in formal language.

It can be difficult to identify learning in children who have serious sensory impairments, but who do not have language. Deafblind children may not be able to show attention or expectation by looking or by vocalisation. The child's ability to handle objects was therefore used to allow a relatively unambiguous demonstration of their achievement, without depending solely on interpretation by the observer.

For the purpose of ensuring, therefore, that learning would be observable, I included only children who could handle objects. In two cases, the child could

only use one hand, but after the pilot study, I predominantly included only children who could pass objects from hand to hand, and who used more than one scheme to play or investigate objects. This excluded children who used only highly stereotyped behaviours which may not have investigated the properties of objects at all.

### **5.5.1 Accessibility**

From the limited number of deafblind children in the UK whom I could reach, I had defined a population further by the conditions described in 5.5. My professional role gave me access to communities of children who are deafblind and their teachers, through my teaching, networking, research, and teacher education. Where possible I chose to work with children and staff with whom I had some regular contact, or whom I knew well. In the exploratory studies I worked in a school I knew less well to leave for later phases a greater number of children with whom I had more regular contact.

The nature of the inquiry required teachers to know children well, and changes of staff altered possible choices of children on a number of occasions. I had also chosen not to approach teachers or children in stressful circumstances. Nevertheless, the situations of children changed during the course of the study. One child went to live abroad for an extended period, one had highly successful major surgery which substantially altered her life, and one sadly died unexpectedly. Finding opportunities when it was appropriate to suggest the detailed and demanding work of the studies to teachers was not easy, and this considerably limited the number of children who could take part.

Different schools had different staffing arrangements. Some children worked most of the time with one person, a teacher, classroom assistant or an intervenor (a person specially trained to work with a deafblind child – see McInnes 1999c, Griffiths 1995). Others worked with a variety of members of staff. As described above, I have used the general term ‘teacher’ to describe all the staff, in an effort to preserve confidentiality. One key part of child studies involved interviewing the child’s teacher (the person working most

closely with her). For the fourteen children, I interviewed nine teachers (two twice), one nursery officer, and five members of support staff (classroom assistants or intervenor). In five cases I interviewed two people together. In all settings, children worked with other members of staff at some time.

## **5.5.2 Impairments and disabilities**

### **5.5.2.1 Measuring vision and hearing**

I did not use, or attempt to use, medical measures of vision or hearing for the children in the studies. I knew many of the children personally to be deafblind. In other cases I explained my definition of deafblindness carefully while discussing children with a member of senior staff. Medical measures frequently do not provide accurate pictures of how a multiply disabled child uses vision and hearing in the classroom. I used an extremely simple, functional assessment of vision and hearing skills for each individual with their teachers. These were not diagnostic or physical measures. They were related to classroom behaviours rather than absolute thresholds (Aitken & Buultjens 1992), and were based on the teacher's knowledge of the child's functioning in the classroom. Although teachers' assessments may not always be accurate, teachers working with deafblind children are likely to have discussed vision and hearing frequently. All the teachers at least had access to qualified teachers of deafblind children to assist with such assessment (six were qualified or qualifying themselves). Since the inquiry did not differentiate on the grounds of sensory ability, I considered this sufficiently reliable. The assessments, although not standard, served the simple purpose of categorising what teachers believed about the child's functional hearing and vision. In all cases where I knew the children, I agreed with the teacher's assessment. Four categories each for vision and hearing were used, reflecting the child's ability to learn from the environment, using the best aids she would tolerate. These categories describe how consistently the child can respond to auditory or visual stimuli. They do not include details such as whether a visual impairment is primarily ocular or cerebral, or a hearing impairment affects high or low frequencies.

For the pilot study, I categorised the child, based on information given in the interview and my own knowledge. For all other children, the categories were agreed in the interview.

The categories are described in table nine.

**TABLE 9 CATEGORIES OF VISUAL AND HEARING IMPAIRMENT**

<b>Visual Impairment</b>	
Category 1	Children who can respond visually only to bright lights, or cannot respond to visual stimuli.
Category 2	Children who are able to respond to certain visual environmental stimuli, but not in a consistent way
Category 3	Children who are able to respond to certain environmental stimuli in a consistent way
Category 4	Children who are able to respond to most or many stimuli visually and consistently.
<b>Hearing Impairment</b>	
Category 1	Children who can respond only to very sudden and loud sounds, or cannot respond to sound.
Category 2	Children who can respond to sounds at a voice level when adult is close to them, but not consistently
Category 3	Children who can respond consistently to sounds at voice level, when adult is close to them
Category 4	Children who can respond to many voice and environmental sounds

The fourteen children spanned the range of visual and hearing impairment, although there was not one child in each category, nor was there intended to be. Two children had the most severe and profound visual and hearing impairments (category one for both visual and hearing impairment), all others were considered to use some vision or hearing. Four of these latter were considered profoundly deaf, and one almost totally blind. One child was considered to have useful vision and hearing (category four for both visual and hearing impairment).

**TABLE 10 VISUAL AND HEARING IMPAIRMENTS OF PARTICIPANTS**

Hearing impairment \ Visual impairment	Category 1	Category 2	Category 3	Category 4
Category 1	Phoebe Siobhan	Kate		
Category 2		Helen	Usha	Grace
Category 3	Caroline Noluthando Satya			Alice
Category 4	Ruth	Debbie	Fallon	Shula

It is not possible or desirable to rank the degree of sensory impairments in these children, especially as the measures are subjective judgements by the teachers for children as individuals, not relating to each other.

Thirteen children were congenitally deafblind, although vision and hearing status for some of them may have changed somewhat over time, with one child (Phoebe) described specifically as having previously had better vision than she presently has. One child was congenitally deaf with deteriorating vision (Usher syndrome). The provision of appropriate hearing aids has also improved the listening skills of some of the pupils during their lives, Kate being an example. Some had diagnosed visual conditions, such as nystagmus or cataracts; four were named as having cortical/cerebral visual impairments.

#### **5.5.2.2 Additional disabilities**

Eleven of the children had significant impairments or disabilities in addition to vision and hearing loss. The issue of learning disability is considered below in 5.5.2.3. Information about these was gathered from the interview and from observations. These disabilities included cerebral palsy, other orthopaedic disabilities, epilepsy, severe medical needs, and autistic spectrum disorders. The behaviour of two of the children presented at least an occasional barrier to learning.

Six of the children could walk, and two others were learning to walk during the course of the study (both walk with some independence now). Two had



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extremely limited mobility, were entirely dependent on others, and required highly supportive seating. Four had severe mobility difficulties, but had some movement with support. Those with mobility and movement disorders frequently had poor co-ordination which further limited their access to the environment.

Four teachers mentioned autism or autistic characteristics in relation to the children:

*'she's definitely got autistic tendencies' (P) 'a kind of autistic characteristic' (N) 'some autistic tendencies' (A) 'sort of autistic tendencies' (S)*

For one child autism had been diagnosed. The question of so-called autistic characteristics in pupils with deafblindness is controversial. Some argue that behaviours similar to those seen in autism are in fact due to deprivation of both distance senses. Broesterhuizen (1986) describes how deafblind children may appear autistic, but this may be related to sensory deprivation. Wyman (1986), McInnes and Treffry (1982) and Nafstad and Rødbroe (1999) also discuss such features, although none use the word autism but rather, non-communicating children, hypo-active, withdrawn children. While there is some research relating to the combination of visual impairment and autism, (see for example, Buultjens & Tansley 1996) as far as I am aware, there is none relating directly to autism and deafblindness. The teachers involved did not discuss further what they meant by autism. There is possibly some link between factors relating to learning style and autism, as discussed in chapter four, and between people object preferences, as discussed in chapters eight and nine. However, given the that there is doubt in my opinion about how autism can be recognised or diagnosed in children with deafblindness I have not considered this matter further.

Various diagnoses were mentioned in relation to the children, including Charge Syndrome, Usher syndrome, possible Rubella Syndrome, as well as less well-known syndromes related to sensory impairments. I have not linked these with individuals for the sake of confidentiality. Seven of the children had

no named diagnosis made known to me – unknown causes of deafblindness are not uncommon in this group (Brown 1997).

### **5.5.2.3 Learning disabilities and dual sensory impairment**

All the children were functioning within the spectrum of children with severe learning difficulties, with their development at the stage of a child less than half their chronological age. However, I have not commented on learning difficulty as a separate category of additional impairment, because the restrictions in access to the environment, experience and incidental learning undoubtedly caused by their sensory impairments and for some, physical difficulties, may have produced developmental delay which would not otherwise be evident. Indeed one teacher stated that she did not believe the child would have had learning difficulties if she had not had serious dual sensory impairment. For other children it seemed likely that brain damage which would lead to developmental, and cognitive processing delay would have existed alongside sensory impairments and the delays thus caused (see Borchgrevink 1994). However, as it is not possible to separate the two categories, and almost all children with dual sensory impairments function within the range of learning difficulties, I have not considered this as a separate disability.

### **5.5.2.4 Educational characteristics**

Teachers provided information about themselves and the children's education at the interview. All the children but one attended schools broadly catering for children with SLD, one school was primarily for children with physical needs. Eleven of them were in specialist provision for deafblind children within those schools. As described above, nine teachers, one nursery officer, three classroom assistants and two intervenors were the key staff involved. Of the teachers, six were qualified or qualifying to teach deafblind children, and three were not. These three all had advanced education in working with children with SEN and had been working in special education for a minimum of thirteen years. Of those teachers with qualifications, four had worked in special education for more than six years, and three for less than four years. The

classroom assistants and nursery officer had all received in-service training in the education of deafblind children, and the intervenors had attended specialist training courses related to their professional development as intervenors for deafblind children.

The children were in eleven classes in four schools. All four key stages, early years and post sixteen provision were represented. This is shown in table 11.

The youngest child only attended school part time.

**TABLE 11 AGES AND KEY STAGE OF PARTICIPANTS**

	Age	Key stage
Usha	3	early years
Kate	6	1
Grace	6	1
Caroline	7	1
Ruth	7	1
Alice	7	1
Satya	8	2
Debbie	8	2
Fallon	8	2
Helen	12	3
Noluthando	14	4
Phoebe	15	4
Shula	16	4
Siobhan	16	post 16

There are no national figures of the characteristics of children with dual sensory impairment. My personal experience in the field suggests that the children I worked with would be broadly similar had I sought such children elsewhere in the country, except that more of the children attended specialist provision for pupils with dual sensory impairment. All the children in the studies had access to specialist teachers; whereas it is likely in the UK as a whole that children do not universally have such access – for example, Boothroyd (1997), shows that a number of LEAs do not provide specialist services for these children. However, schools for children with severe learning difficulties and those for children with physical impairment are recognised by Boothroyd (1997) and Porter et al. (1997) as providing education for significant numbers of these pupils.

The children chosen were not intended to be representative of the population of school age deafblind children. They illustrate, rather, part of the range of children with deafblindness, each with features unique in themselves that add to the whole picture.

## **5.6 Undertaking the studies; development of methods**

In order to investigate learning styles in these children, I first sought possible methods for gathering evidence about the way in which these children learned. Sources of information which could be considered included information from the child, information from the teacher, direct teaching and recording, children's written educational records and observations.

### **5.6.1 Information from children**

The deafblind children who are the focus of this inquiry, that is, those without formal language, are not able to comment on their own learning style. They are assumed not to have meta-cognitive strategies of which they are aware, or at any rate about which they can communicate, and there is currently no recognised way of accessing any knowledge they may have. These children are not able to complete assessment materials designed for children functioning at more typical levels, such as those used by Feuerstein et al. (1979) or by O' Brien (1989 cited in Jonassen & Grabowski 1993). Seeking direct evidence from the child involved was unlikely to be useful. Although four of the children used single signs, I considered it highly unlikely that they would have been able to understand the nature of any enquiry about their preferred styles. However, future work could examine how children with some language skills be helped to understand their own preferences, perhaps through the use of symbols, or marks, or evaluation. For example, children could perhaps request when they would like physical assistance and when they would not, through using signs, gestures or symbols in a structured situation. It seems probable that this will continue to be inappropriate for children with no language skills.

### **5.6.2 Information from teachers**

The teacher of a deafblind child is likely to work closely with that child, and to be an especially rich resource of information concerning sensory skills, educational achievements and current plans, and the previous learning of the child, particularly where she has worked with the child for a number of years.

Her knowledge includes conscious and unconscious perceptions of the child, those which she has made overt (through record keeping) and those which have not been formally recorded. However, it is also possible that the teacher has made assumptions about the child which may not be justified. She may not have thought about learning styles at all, and may not be able to comment on this aspect of learning.

Questions to adults who know deafblind children well are used in some assessments to gather information which the child is not able to give herself (Stillman & Battle 1986, Kiernan & Reid 1987). The use of interviews allows more information to be gathered in a short time than is possible with observational data, and is therefore a useful complement to observation. I interviewed teachers before undertaking the assessment work, and this data provided a background for my understanding about the child. The interviews were semi-structured, using a question schedule with probes for further information. A copy of the interview schedule is in appendix seven. The interviews were tape recorded, with a transcript later made and returned to the teacher, as described above in 5.3.2. The use of transcription, rather than making notes, means that the preconceptions of the interviewer are not carried over into the recording of information, although of course they may be carried into the way in which the interview was used! (Gall et al. 1996). Although a schedule of questions was used, teachers spoke at different lengths, with different intensity and with different degrees of relevance about their pupils. The flexibility of the interview means that all the relevant data could be collected, coded and used to support the findings about the child's learning style (Mouly 1978). The interviews were also carried out by me, someone known to all the people interviewed except two. This meant that the

teachers may have been more forthcoming, and more willing to explore issues than they might have been with a stranger. Interviewing well is a specialist technique however, and I am not a trained interviewer. Some opportunities were probably missed, and some mistakes made.

The interview provided general and background information about both teachers and children, and also some information about the child's learning style. Interviews in phase three were more specific about learning style, with questions about learning and teaching style included. Some of the comments made by teachers which I used as evidence of learning style may not have been recognised as such by the teacher being interviewed.

Based on my experience with children with dual sensory impairment and the schools they attend, I initially decided not to investigate school records. My experience led me to expect that most records would not include significant comments on learning style, and that information about the differences between successful and less successful learning would not be easily found in these records. Formal measures of success through testing or even standard achievement tasks were not likely to be relevant or appropriate for this group or this inquiry. The evidence from the questionnaire was that formal assessments which might have provided some measure of learning success may not have been carried out. Teachers were asked whether they had formally assessed the child, and their answers confirmed that this type of material would not be widely found. In phase one and phase two of the inquiry I did not therefore use schools' records. However, in phase three, I returned to use information from pupils' records (see 8.2.2.2). At this time I was looking for evidence outside formal assessments, and widening the number of people whose perspectives were included by using records from the past.

### **5.6.3 Information from taught task (assessment document)**

All the phases of the inquiry used a taught task as an assessment technique. This task was individually designed for each child by me and the teacher. After the pilot study, some common features and guidelines were included for

the task, and the teaching was structured and somewhat standardised. The questionnaire indicated that teachers would probably not have assessed learning style, certainly not within the conceptual framework I was using. I considered it likely that teachers would have made some assumptions about the child and possibly have some preconceptions, if asked about children's learning styles. I sought more direct information, less influenced by the teacher. I therefore used teacher-recorded observational data about the child's learning style through the teaching of a particular task over a short period of time. The teacher would be a participant, recording her observation on the process of learning (Hammersley & Atkinson 1983 cited in Wellington 2000). Although this meant that two primary sources of evidence would be mediated through the teacher, there were, as outlined below, good reasons for asking the teacher to carry out this task. The design of the task was based on ideas from the work of Ozer and Richardson (Ozer et al. 1970, Ozer & Richardson 1974, Ozer 1978), of Morse (1992) and Coupe and Levy (1985).

Although the task was structured to minimise the teacher's individual style, her assumptions might still influence the evidence collected. While this could cause misinterpretations, it was likely to be more reliable than collecting such data myself, for a number of reasons.

Firstly, it is believed that many deafblind children depend heavily on a secure relationship with an adult before they are able to respond successfully to other learning experiences (Nafstad & Rødbrøe 1999, McInnes & Treffry 1982) (such relationships with adults could however themselves be related to learning style (see 9.3.4.3.)). They are therefore much more likely to show their abilities with teachers with whom they are already familiar. It would have been unethical to expect the children to expend the energy required to get to know me for a very short time (Jacobsen et al. 1993).

Secondly, the teachers knew the children well. This was important because the responses shown by deafblind children are frequently subtle and ambiguous to the unaccustomed or unfamiliar observer. An observer who did not already know the child well might not be able to judge whether the child

was *'looking'* or *'attending'* or *'excited and anticipating'* as opposed to *'frightened'* in certain situations. The method used relied heavily on the teacher's interpretation of the child's responses. Simple, strictly observational data, such as *'turned head to left, eyes up'* would have required hours of observation to interpret a pattern of behaviour that it was assumed the teacher would already have interpreted. Additionally, because she knew the child very well, she was able to interpret which behaviours were meaningful and which were repetitive or other typical behaviours which were not aimed at achieving the task. These could be recorded as negative responses. Helen (see 7.3.1.) frequently banged her tray, at all times of day. This action was therefore not considered an attempt to carry out the task of banging a tambourine.

Thirdly, the introduction of a person not very familiar to the children would have introduced an extra variable, and required them to adapt to novelty as well as the demands of the assessment. This could have affected the outcome of the study.

Fourthly, the gathering of data using the teacher also meant that more time could be spent with each child than I would have been able to give. The artificiality of the taught task meant that it was more likely that the results were independent of the teacher, and so more credible.

The second task, which was introduced in the phase two studies, allowed the child and teacher to return to a more natural teaching style, while utilising the information from the taught task assessment. This also contributed to the overall benefit for the pupils.

#### **5.6.4 Information from observation**

Direct observation would provide information which would not be influenced by the teacher's perceptions. However, it would be influenced by what was currently happening in the child's classroom life, in particular by the teaching styles of the people working with the child, the classroom environment and the child's behaviour and demeanour during such an observation. It also takes time both to carry out and to analyse effectively (McKernan 1996). In the phase one and two studies, I considered that more useful information would



come from using a structured, predefined approach to teaching than from an unstructured observation. It is also difficult for an observer who does not know a child well to interpret the child's actions, as described above. I gradually became aware that I needed to know and understand more about learning styles in deafblind children to carry out such an observation effectively. This included some understanding of issues relating to prompt modality preference and the difference between teaching styles and learning styles.

In phase three I included a direct observation by me, someone outside the teaching team, to add a different perspective on the child to those of her usual teachers and other sources. The methods involved in the observation are mentioned further on in chapter eight in 8.2.2.1.

Thus a case study methodology was used for the studies, using a variety of methods in different phases. As the inquiry developed, the methods changed to reflect the changing nature of the inquiry and my increasing knowledge and understanding.

### **5.7 First phase studies; the pilot study**

The first phase studies comprised a pilot study with one child, Phoebe and exploratory studies with three children Caroline, Grace and Usha. The pilot study was undertaken to explore firstly whether learning style information could be identified in a deafblind child, and secondly to investigate an appropriate methodology and methods for such an inquiry, in particular appropriate methods of assessment and interpretation of assessment information. The pilot study used a teaching assessment to find out about learning styles and examined what the teacher already knew about the learning style of the child. It was intended to lay a foundation for further exploratory studies, through developing methods and investigating the concept of style. The pilot study was a case study of one pupil, Phoebe, and her teacher. The methods used with this child are detailed briefly below.

### **5.7.1 Phoebe**

Phoebe, as detailed above, had very severe visual and hearing impairments. She had no useful vision (category one ) and no useful hearing (category one). Her teacher reported:

*I've never seen any response to sound, although she's very interested in vibration*

and:

*she has some residual vision, ... on a good day, she can see bright objects in good contrast... at half a metre*

although she is also described as previously having had better vision. Her teacher considered that she used neither vision nor hearing effectively for learning.

Phoebe was only able to use one hand effectively.

### **5.7.2 Interview – information from teachers**

The questions included objective queries about the teacher's experience and training and assessments she had undertaken with the child and more subjective queries about her opinion of the child's ability, the child's learning style and strategies, and what encouraged successful learning (compare Ozer 1978, Curtis & Donlon 1985).

The teacher was also asked about formal assessments (developmental or educational) undertaken with the child. To discover whether such assessment informed teaching, she was asked how the child's current educational priorities had been chosen. Appendix seven is a copy of the interview structure, with the questions asked. A transcript of relevant parts of one of the interviews is included in appendix eight.

### **5.7.3 Taught task; assessment document**

Finally in the interview, the teacher and I designed a task for Phoebe. The teacher would keep assessment records as she taught this task.

The task was to find a mint sweet (a great favourite of Phoebe's) from one of two small boxes when the lid of one box was marked with a large Moon letter for the first letter of her name. Her teacher thought she might achieve this within two days, and that thereafter we would mark other boxes with different Moon letters.

The teacher had two weeks to work with Phoebe for short sessions each day. Following this she was asked to fill in an assessment sheet with 26 questions under nine headings, to sum up her impressions. This assessment is in appendix nine. Some of the questions were suggested by the work of authors in this field. Those about specification of learning style, primary learning modality and materials were based on Langley (1986), those relating to flexibility, ability to learn from demonstration, use of trial and error responses, confidence, precision and ability to work with an adult on Bond (1986a), those relating to applying previous knowledge and skills, confidence, and perseverance on Fisher (1990), those concerning flexibility and fluency on Guilford (1950 cited in Fisher 1990), those concerning development of precision, modality, interaction and pace on Feuerstein (in Fisher 1990 and Feuerstein et al. 1980). It also included questions linked to the Object Related Scheme Assessment Procedure (Coupe & Levy 1985) and a checklist I had previously designed for assessing hand use in children with dual sensory impairment (Hodges 1993).

## **5.8 Results; the child and learning style**

### **5.8.1 Interview**

The teacher described several features of Phoebe's learning, from which some interpretation of her learning style could be made. These included:

- continuity (security) in her environment:

*she desperately needs to feel secure, she needs continuity*

- use of motivating situations and materials:

*(Choosing) what motivates her for one thing, what I know she's interested in*

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- use of scripted routines, where Phoebe was able to predict exactly what would follow:

*she's very very good at learning routines, she picks (them) up very very quickly*

*the best way for her to learn is through scripted activities*

- tactual communication (signing, objects of reference and fingerspelling):

*she needs fingerspelling on a fairly simple level but runs (sic) through everything she does, she needs a certain amount of manual signing and body signing and other things as well to support that, plus objects of reference and real objects*

- her use of her sense of smell and her awareness of temperature and humidity:

*she uses her sense of smell very well, she can work out where she is, which room she's in, who she's with and to a certain extent what the material she's working with (is) she can detect even subtle things like changes in humidity using her face and she can certainly detect temperature changes using her face*

Because Phoebe has very severe impairments of both hearing and vision, her teacher did not comment on use of hearing or vision.

The teacher also described an example of successful learning, (response to fingerspelt communication) and the factors which contributed to this success. These were the use of routine, the use of motivating activities, her tactual senses, and building on her previous experience.

### **5.8.2 Ability and assessment**

During the interview Phoebe's teacher said she had never carried out a formal assessment because:

*as far as I can see there's nothing useful that any test would be able to tell me .*

She was aware of an early educational assessment (Phoebe was 15) and she had taken part in writing an annual review each year.

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She also spoke of her as:

*being intact on a cognitive level....whatever that means...*

She did not consider Phoebe as severely cognitively impaired, as she considered some other children in the class to be, despite her apparent low level of functioning. She described her as quick to learn and to adapt what she learned to new situations, and considered that her learning was like that of children without impairments, although:

*incredibly delayed.*

### **5.8.3 Taught task; assessment document**

The teacher did not find it possible to fill in the assessment document, which was complex and proved unwieldy. The questions were not precise enough, and the teacher was not sure what she should write down, or in how much detail. Instead, I discussed Phoebe's learning with her teacher, using the assessment document as the basis for recording information. The teacher was not able to give an answer to all the questions and the answers she gave were quite brief. Much of the information was very similar to that gained from the interview, describing Phoebe's need for:

- routine, through following a sequence to complete the task,
- motivation, by use of a preferred sweet and by adult attention, and by use of interesting materials
- the use of novel materials, which she was believed to prefer (although earlier she had been said to like consistency)
- fingerspelling, through using fingerspelt prompts throughout the task
- tactual and physical prompting
- adult assistance if she cannot complete the task herself.

She was able to identify some particular features which had not been commented on before, such as how Phoebe tackled a task. She described for example how Phoebe approached the task with confidence, but if she could

not complete it after a couple of attempts she would turn to an adult for help. The impression I gained after the discussion was that the answers were very general, largely based on what she already knew. The teacher may have had an intuitive understanding of the child's learning style rather than a tested knowledge. She did not give many specific examples relating to the task, except when such detail was requested. The interview data supported the interpretation of the data collected through the recording document, but it appeared that the two were insufficiently distanced from each other. I wanted to obtain evidence about the child that was not only based on the teacher's opinions. I needed to find methods that would be appropriate for such evidence.

## **5.9 Results; development of methods**

I had gathered information about learning style from two sources, and these appeared to demonstrate the probable value and relevance of learning style to this deafblind child. However, these two sources (teacher interview and assessment document filled in by the teacher) drew substantially on the same interpretation, that of the teacher. The teacher's presumed understanding of the concept of learning style may have been overestimated. It was not yet clear that the teacher could describe learning style accurately in terms of her teaching process. Further corroboration of data which was less susceptible to teacher influence and interpretation was needed.

### **5.9.1 Interview**

Most of the information gained from the interview proved to be useful. The teacher responded to the questions I asked with the types of information I was expecting, and in most cases gave sufficient detail.

However, the interview was conducted before the direct data was collected and this in itself may have influenced the teaching of the task, making the teacher think more precisely about the child's learning style. This may have altered, subconsciously or otherwise, the teaching styles that were

subsequently adopted in the teaching task, and may have influenced the collection of the data.

The interview also showed some difficulties in attributing learning. When asked to give an example of successful learning, the teacher described learning to recognise fingerspelt words. The teacher said that this was not consistent, but that:

*she's developing a repertoire of words that she reacts appropriately to now.*

However, the teacher was not able to pinpoint anything Phoebe could do which was different from what she had done before. She was physically unable, for example, to demonstrate understanding by going to the correct place in the room or picking up correct equipment. There was no observable changed behaviour that supported the teacher's conviction that she understood. A description of learning which emphasised observable change was therefore used from this point onwards. Learning and learnt behaviours would also be more demonstrable in children who were able to use both hands to manipulate objects, and this requirement was in future discussed with teachers.

### **5.9.2 Taught task; assessment document**

It was possible to gain observational data from a taught task. This had not been very difficult for the teacher to do, and had fitted in with the child's programme. The assessment information recorded also showed that the teacher had thought about the child's learning style and had mentioned some elements which seemed to be new to the teacher's understanding. This also suggested that further investigation would be valuable. However, there were practical difficulties. The assessment document was too long and covered too many variables, making it impossible for the teacher to base her record on the teaching sessions alone, so forcing her to depend at least in part on what she already knew or assumed. Thus this information was drawn from the teacher's perceptions which had already been recorded in the interview. The scope of the document was wide ranging, and perhaps required a greater understanding of the concepts underlying learning style than the teacher had.

The teacher and I designed the learning task together, but the teacher worked on it alone. Apart from the assessment document, there was no record of the child's learning or the teacher's approach. It was not possible to judge whether other people would see the child in the same way. There was also no record of how many times the teacher taught the task, or how she approached the task, or of what she actually did while teaching. For example, although the assessment document asked about which modalities the child preferred, there was no way of ensuring that more than one modality was used, which might be the one which the teacher preferred, or the one she believed the child preferred. Both the teaching of the task and the assessment document needed revising. This would provide firstly some system for the teaching of the task which would make it less influenced by the teacher's preconceptions, and secondly an opportunity for more than one person to observe. This could be difficult, since sometimes it would be expected that children would give subtle responses, which were difficult for an observer to see. Although the learning task had been useful as a discussion tool, it appeared that changes would make it more useful in terms of providing information. A new style of taught task would be needed; it would be more specific, address far fewer variables and be much shorter. This would also mean it was more likely to be completed, and thus provide different information from that gathered from the interview. The new assessment document could also be written so that to some extent, it was possible to standardise the teacher's natural style and to ensure that recorded information was more precise and specific. The revised documents are described in chapter six.

### **5.10 Discussion**

The pilot study showed that it was possible to gather information about the learning style of a deafblind child from the teacher and from more direct observation and recording. The teacher and the recording document identified some features of the child's learning style. The study showed also that the teacher indeed was aware of some aspects of the child's learning style and



was able to articulate this information. The data collected from the two methods showed strong similarities, with three issues being predominant in each, the child's need for routines, fingerspelling and motivation. The task teaching situation did highlight some learning strategies of which the teacher may not have been so aware before.

### **5.11 Summary of development of methodology**

The inquiry would be broadly qualitative, seeking information from a variety of sources to create individual case studies which illustrate and support the contention that deafblind children have learning styles. The purpose of the inquiry is exploratory, to discover what can be known about learning styles in deafblind children and to identify appropriate means for assessing these and how they can be applied to teaching and learning. The children who took part in the study would be dual sensory impaired children who were not able to use language to describe their learning, but were able to demonstrate learning through activity. I would use professional contacts to reach children and teachers who could provide good quality information. The inquiry would be undertaken in such a way as to minimise any disruption to children's education, and possibly to prove beneficial to them. Measures would be taken to decrease the possibility of identification of children and their teachers.

### **5.12 Summary of pilot study**

The pilot study focused on the assessment of learning style in an individual deafblind child, and showed that it was both possible and potentially profitable to further examine learning styles in deafblind children. The use of the taught task discovered information which might be valuable in informing planning for future programmes. Although both methods of collecting data were useful to some extent, the taught task needed to be redesigned and improved to ensure that the data collected was more precise, more complete, and more distinct from that collected by the interview.

### **5.13 Conclusions**

The pilot study had shown that although the assessment of learning style was useful for the individual child, the present methods evolved for doing this were unwieldy and inadequate. It appeared that learning style might be a relevant concept for the deafblind child, but this study failed to identify effective means of assessing it. The case study approach, however, had been useful in discovering in-depth information about the child and her teacher. The use of a taught task had allowed a basis for discussion. Further case studies could add weight to the proposal that learning style was a useful concept in the education of deafblind children, and case studies with different methods could provide more dependable information. The pilot study had focused on too many variables, and the methods could not support this. The next stage was to focus more tightly on a controllable aspect of learning style, and to add more case studies to the inquiry. The exploratory studies, described in chapter six, focused on only one aspect of learning style, that of prompt modality preference.

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### **Exploratory Studies**

“I am learning that Deaf-blind culture is intimate; one thing at a time; it’s as far as hands or cane can reach, immediate as touch. That makes it private, tribal”.

Joanne Greenburg (1998) Of such small differences p 126.

#### **6.1 Introduction**

The pilot study had shown that investigation of learning style in a deafblind child might be fruitful, but that the methods used for identifying it needed to be appropriate and suitable for the classroom setting in which I was undertaking this work. The preconceptions and opinions of the teacher, while valuable, needed to be distanced from other information regarding style, to gain a fuller picture of the child. Data relating to more children needed to be added to the developing evidence about style, and a better method of investigation and assessment needed to be developed. This chapter describes studies undertaken to address these issues. The study of more children added to the evidence relating to the question:

- Is the concept of learning style relevant to deafblind learners?

The methods used in the studies described here add to the evidence for the question:

- Is it possible to assess learning style in this population?

In the exploratory studies, only one aspect of learning style, the modality of prompts which the child preferred, was examined through the taught task. The significance of modality and prompting are discussed in 6.3.1. This allowed for the development of methods of assessment and of my understanding of learning style in deafblind children.

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Three children and their teachers were involved in these studies. The aims of the exploratory studies were:

- ◆ to establish whether the children exhibited consistent learning styles in relation to sensory input, and if so, how these related to their known sensory impairments
- ◆ to discover whether teachers' perceptions of children's learning style matched the learning styles the children appeared to use during the assessment
- ◆ to explore what assessment strategies and tools had been used by the teachers, and what they currently knew or assumed about the children's learning ability

With a view to continuing to develop the methods I was using for the inquiry, I also considered:

- ◆ the demands of involvement in the study for the teachers, the children and for me as the researcher
- ◆ the feasibility of generating meaningful data considering the relatively short period of time and the individualities of the children and their overall difficulties
- ◆ the benefits and possible disadvantages of using a structured teaching approach to record information systematically.

### **6.2 Participants**

The studies included three children, Caroline, Grace and Usha, and their teachers. They all had dual sensory impairments and met the conditions described in 5.5 above. Summary information is presented in table 12.

**TABLE 12****SUMMARY INFORMATION ABOUT PARTICIPANTS IN THIS PHASE**

	Visual impairment category	Hearing impairment category	Age	Key stage
Caroline	two (limited useful vision)	one (no useful hearing)	7	1
Grace	two (limited useful vision)	four (significant useful hearing)	6	1
Usha	two (limited useful vision)	three (useful hearing)	3	early years

More details on the children's sensory impairments are provided in the individual child summaries. The three teachers working with these pupils were enthusiastic in talking about the children they worked with.

### **6.2.1 Interview – information from teachers**

The interview evidence included factual information about the children's and teachers' background, and information about the teachers' impressions of the children's ability. This information related to learning successes and difficulties particularly in relation to sensory impairment, and information about learning style was interpreted from this. Within the question '*what has been the greatest success since you started teaching her?*' an additional probe was used. Teachers were now asked to describe '*something the child can do now, that she couldn't do before*'. This also provided an opening for discussing a child's ability or potential ability. Interview transcripts were returned to the teachers for checking.

The tape at one interview failed; this interview was written down immediately afterwards based on notes taken at the time, and then returned to the teacher for comments and corrections. There are therefore no direct quotations from the interview with Caroline's teacher, except where she commented in her own writing.

### **6.2.2 Taught task; assessment document**

The taught task was thoroughly revised for the exploratory studies. A wide range of aspects of style were shown in literature, and the pilot study indicated that it was possible to explore some of these aspects through a taught task. However, the information needed to be corroborated by sources more independent of the teacher. The exploratory studies were designed to focus deliberately on a single aspect of learning style, that is, prompt modality preference. Hammersley (1987) describes how an instrument for measurement should be 'appropriately precise' (p 77) to ensure that the information collected and measured by it is valid. The new taught task, redesigned to record the success of different types of prompts, was intended to be such an appropriately precise instrument, considering the complex needs of the children and the complex requirements of teaching them, along with the need for more direct information about this aspect of style. It now focused on the modality of prompting used in the task, and the task process was redesigned to record the success of different types of prompts. A video of one teaching session for each child was also intended to be included, although because of absence, only one video of one child was in fact available. This is described in 6.5.1.1.

### **6.3 Prompting as a teaching strategy for deafblind children**

The taught task assessment was substantially restructured for these studies. The use of prompting was chosen as a relevant, controllable variable which could be used to demonstrate different performance to the teacher or an observer. The justification for the significance of prompting and its relationship to modality preference is described here with reference to literature.

Prompting is recognised as a significant technique in the learning process for children who have learning difficulties, which includes deafblind children (Feuerstein et al. 1979, Ozer & Richardson 1974). The exceptional needs of deafblind children and the heterogeneity of this group have already been established. It may appear obvious initially that the best way to teach

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deafblind children is through touch, but most have residual vision and/or hearing. Downing and Eichinger (1990) describe the benefits of hand over hand teaching, QCA (1999) discusses physical modelling as the most appropriate teaching strategy, and Rødbroe and Souriau (1999) argue that the best approach to learning is through touch. However, research evidence contradicts this:

It appears from our data that teachers were using other strategies, many of which involved physically manipulating the child but which were not effective in leading deafblind pupils to reach their stated objectives (Porter et al. 1997 p 73).

There is other evidence showing that children's preferred prompt modality may be misunderstood and that certain types of prompt are not as helpful as they are perceived to be (Lane 1996, Farrenkopf et al. 1997, Bierdermann et al. 1994 – see 6.3.1.1.).

The techniques of teaching through prompts have a theoretical foundation in precision teaching, based on a behavioural methodology, although they are also found in other teaching approaches. Prompts are designed to assist a child in learning a task without error.

Prompting is used widely in teaching deafblind children, and the focus on prompting also meant it was possible to alter both teaching and the task itself in relation to this aspect of style. Teachers probably already altered their use of prompts, consciously or unconsciously, in response to perceptions of a child's sensory access through vision, hearing and tactual skills. While most teachers probably used multi-sensory prompts naturally, a prescribed order of single modality prompts could be constructed. The teacher was less likely to be able to alter aspects of the learning situation such as her relationship with the child, her pace and intensity in teaching, or how she inspired confidence. The use of different prompt modalities (visual, auditory and tactual/ kinaesthetic) was chosen as the focus for these studies. The second version of the taught task explored only the response to prompts in different modalities, a more limited project, but one that could be expected to reveal more precise information.

### 6.3.1 Modality and prompting

The significance of different modalities for prompting for children with multiple disabilities and sensory impairment is addressed in literature, and this is outlined here to support the choice of prompt modality preference for the exploratory studies.

Feuerstein (et al. 1979) mentions the importance of further research in modality of presentation. He believes that success or failure in a task:

is often a direct function of the preferential modality characteristic of the individual (Feuerstein et al. 1980 p 81).

Feuerstein (et al. 1980) however is discussing cognitively complex skills, opposing spoken language to written or gestured instructions. Ozer and his colleagues also identified the best methods of presenting tasks, whether through visual, auditory or tactual means (see esp. Ozer & Richardson 1974). Curtis and Donlon (1985) discuss the impact of the presentation of tasks on the child's learning. QCA (1999) says that teachers of deafblind children should record the intensity of prompts which they call physical, gestural and verbal (which may relate to tactual, visual and auditory, although the text does not make it clear) to assist in teaching and to show pupils' progress. Despite opinions (as discussed above) that all deafblind children will learn best from tactual information, these studies assume deafblind children's prompt modality preference will vary from child to child. There are disadvantages as well as advantages in the use of tactual modelling (Project Salute undated).

Although there has been much focus on the assessment of vision and hearing for deafblind children (for example, BATOD 1997, Aitken & Buultjens 1992), there is little evidence about the use of assessment of vision and/or hearing in relation to prompting. (However, see Morse 1992 who provides an example of relating visual assessment to learning). There is little literature about the assessment of tactual function in this population, which is perhaps not sufficiently understood (McLinden 2000).



### **6.3.1.1 Different modalities for prompting**

Farrenkopf et al. (1997) describe the results of a study with an individual with cortical visual impairment and deafness. A prompt regime was used which focused alternately on verbal and what they called physical prompts (but in fact, the physical prompt was assistance to focus by steadying the head – this may have increased visual rather than tactual/kinaesthetic information). The physical prompt was consistently more successful. Lane (1996) used a single modality prompt (tactual/kinaesthetic) and a multi-modal prompt (tactual/kinaesthetic and verbal information) and shows that the learners with visual impairment in his study (who were not deaf) had definite preferences for one or the other, in most cases, a single modality prompt. Bierdermann et al. (1994) used 'active modelling' – a hand over hand technique and 'passive observation' – a visual demonstration technique with students with multiple disabilities and he shows that the visual demonstration alone increased learning. Sacks (1998) argues that it should not be assumed that students with visual impairments learn better through auditory means, when in fact they may also have difficulty with processing sounds and auditory memory. The fact that these studies do not show one single preferred technique supports the argument that this may be related to individual learning style, and that it is worth investigating individual preferences for prompting.

This evidence, especially that of Bierdermann et al. (1994 – although not about deafblind children) shows that tactual/kinaesthetic prompts will not be the most beneficial to all children. The tactual system itself may be damaged, as described by Sweeney et al. (1998) leaving a 'tactual/kinaesthetic perceptual disorder'. Manipulating the hands of a child who does not see well may deny her the ability to control her own world (Nielsen 1996, Lee & MacWilliam 2002). This may lead to passivity and helplessness (Marks 1998). The use of the words 'tactual/kinaesthetic' also greatly simplifies the complex interwoven systems of active and passive touch, using mechanisms which include perception of objects, proprioception and movement (Roberts & Wing 2001). There is evidence that muscle movement (active involvement) promotes the sensory experience of touch, which may therefore be limited by the use of

passive, manipulative prompts (Roberts & Wing 2001, Nielsen 1996, Smith & Toy 1998). Anecdotal evidence from my work and knowledge of teachers and deafblind children indicates that in general they use multi-modal prompts, using visual stimuli, auditory stimuli and possibly touch techniques at the same time, although some might be less emphasised because of the effect of the perceived sensory impairment. Lane (1996) states that the use of two stimuli may create confusion for the child, and Bierderman et al. (1994) agree that the use of too much information might confuse the child with multiple disabilities. Farrenkopf et al. (1997) however indicate that a verbal prompt might assist the child to attach a label to an object she was looking at, and so assist visual attention. My planning of the teaching schedule was informed by literature on prompting and modality.

### **6.4 Organising the teaching schedule**

The most significant change to the taught task was the focus on the single variable of prompt modality preference. For the purpose of teaching in these studies, the taught task was devised to use a predefined sequence of single modality prompts in a designated order. In each session there could be up to 15 trials in different modalities, 75 across the teaching of the task for five days. Information gathered in any one session could be added to that from subsequent and previous trials, to allow for greater dependability. Although prompting was arranged and the tasks were selected to maximise the use of single modality prompting, such isolated modality prompting was not always possible. For example, to make a sound with some equipment would require it to be moved, this could attract visual attention, although it might appear to be the sound that had gained the attention. There were also other limitations. Not every child and teacher would be able to keep exactly to the schedule on every occasion. For example, if a child had completed a part of the task, it might not always be possible to go back and use the prompts as specified, if the child were becoming frustrated.

The task used single modality prompts. It was possible that some children would benefit most from learning styles that did not involve prompting at all or

involved it only minimally, or that they would benefit most from multi-modal prompts. These aspects were not investigated (but are discussed further in 9.3.4.9.).

The recording document outlined a specific way of teaching the task to the child. This meant that the data collected would be less subject to interpretation by the teacher in the recording, and more comparable to the data collected from other children, since the teaching of the task would be similar from child to child, although no measure of this was made. Of course, the teacher's recording would still be subject, to a certain extent, to her preconceptions or ideas about the child, but this type of recording at least overcame some of these.

The task might appear to be based on the assumption that prompts in the three modalities were somehow equal or the same across the three levels, that visual, auditory and tactual/kinaesthetic prompts were the same but simply transferred between sensory inputs. Van Dijk (1988) describes processing styles for different modalities as different. A visual prompt may be continuous and not need repeating (for example an item on a table). An auditory prompt is transient and a child whose processing speed is slow may not respond to the prompt because it has ceased before she has been able to process it. A tactual prompt, of itself, if not rejected, would lead to a recorded response: the prompt itself engages the child with the task. This would mean, for example, that tactual prompts with a very passive child would appear more positive than visual or auditory ones. However, the prompt levels I proposed were reflections of those which I think are typically used by teachers.

#### **6.4.1 The presentation of the task and the prompting regime**

The prompting regime as described in the assessment used prompts at three levels. These prompts were intended to be from minimal to maximal in terms of assistance provided (Downing & Eichinger 1990). However, the effect of dual sensory impairment alters the typical pattern of assistance as described, for example, by Foxen and McBrien (1981). They describe physical prompts as the most helpful, visual prompts as the next most helpful and verbal

prompts as providing least support. But this may not be the case for children with dual sensory impairments and possibly damaged tactual systems. They also describe three levels of prompt, elicitation (attracting attention), gesture and physical prompting, using respectively hearing, vision and tactual/kinaesthetic prompts. There is no evidence of which I am aware which would show whether prompts do necessarily provide more assistance if they are physical than if they are visual or auditory.

The prompt schedule which I used for the taught task aimed to use the three different levels of assistance described above across the three modalities. The word 'gesture' implies visual skills, but the sense of this in relation to prompting is:

actions by the trainer which indicate to the child what is required (Foxen & McBrien 1981 p 30)

and this can be provided also by physical or auditory means. Foxen and McBrien (1981) use the word 'demonstration' to describe a physically prompted model of the action. But demonstration can also be through vision or hearing, although it is recognised that these may not all be directly equivalent. Attention prompts (elicitation) were also given in three modalities.

The teachers were asked to give prompts at these different levels, firstly attention prompts, then assistance prompts, and finally model prompts. The instructions the teachers were given are described below. The order of the modalities was altered from day to day in each level of prompting to ascertain whether the child would, for example, respond to any attention prompt, or only to one in a specific modality.

#### **6.4.1.1 First level Attention prompts**

The first level of prompts were attention prompts, to focus the child's attention on the task.

**Visual** – attract attention to equipment visually, for example by moving it to reflect light or by pointing

**Auditory** – attract attention by sound, for example by tapping equipment

**Tactual/kinaesthetic** – attract attention by placing child's hand on the object

If the child was attracted by one prompt, it might not be possible for the teacher to return to any attention prompts if, for example, the child had already started to interact with the equipment.

#### **6.4.1.2 Second level Assistance prompts**

The second level of prompts provided assistance in achieving the task. These prompts are similar to the gestural prompts described above, but across modalities.

**Visual** – a gesture, for example a movement closely matching that required to achieve the task

**Auditory** – if possible, making the sound the object made as the task was undertaken, accompanied by a single word/short phrase relating to the specific action required, such as 'push it'

**Tactual/kinaesthetic** – placing the child's hand on the relevant part of the object which they need to move, or position it correctly, for example, with hand over the correct area to push.

If a prompt at level two or three did not gain a response from the child, the teacher would repeat it.

#### **6.4.1.3 Third level Model prompts**

The third level of prompts were models of completion of the task.

**Visual** – a complete demonstration of the action within the child's visual field

**Auditory** – detailed verbal instructions as to how to complete the actions

**Tactual/kinaesthetic** – a complete demonstration of the action with the child's hands under or over those of the teacher.

#### **6.4.1.4 Prompting schedule**

The apparatus was initially presented without intervention, to ascertain whether the child could succeed in the task (on this occasion) without further teaching. The teacher then presented and taught the task using the prompt

schedule. This presentation is similar to Ozer and Richardson's Diagnostic Evaluation procedure, although they used the verbal prompt first (Ozer & Richardson 1974).

The level of prompt was consistent from day to day, (attention prompts were always given first, then assistance prompts and then model prompts), but the modalities were changed, to reduce order effects. This allowed the effect of sensory input to the task, rather than the number of prompts required, to be deduced from the recording (compare Ozer & Richardson 1974). The teacher was asked to fill in the child's response to each prompt on the record sheet.

For each child therefore, a learning task was devised, in discussion with the teacher, which could then be taught and recorded in this precise way, using set variables in teaching strategy to explore learning style responses.

### **6.5 The taught task**

The task was designed with the teacher immediately after the interview. These were new activities usually using specially made or adapted equipment, and they were designed to be taught only for a few days. The tasks were designed to use different modalities insofar as possible, to allow the teacher to see how the child responded to different prompts. The children differed widely in their current skills, in their motivations for different activities, in their functional learning speed, in their physical and sensory abilities and impairments, in their preferences, in age and gender. No single task would have been suitable for every child, so it was not possible for the children to undertake identical tasks.

Each task was designed to meet the following criteria:

- ◆ it held a degree of motivation for the child, either intrinsic to the task, or because a reward was built into the task
- ◆ it was considered by the teacher that the child would be able to show significant progress on the task in a week, that is, progress that would be apparent to someone who knew the child less well than themselves

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- ◆ it was considered that the child would not achieve the task in the first two or three teaching sessions
- ◆ each teaching session for the task would be no longer than fifteen minutes, so as not to disrupt the child's routine
- ◆ each task involved 'opening something' so all the children were working on a task in the same domain of learning, broadly a problem solving task. This also meant that the task had a criterion for success within its structure
- ◆ the task itself was new to the child and presented unfamiliar materials, even though the concept of opening might be familiar to some children
- ◆ the materials used in the teaching task itself could be presented and used in ways which allowed prompting using visual, tactual and auditory cues in an enhanced way.

The teacher was asked to teach the task once a day for five days (or until the child achieved the task consistently if this was sooner). The children in this group, in common with many deafblind children, had short attention and concentration spans, so only a small number of trials could be carried out on any one day. The effect of fatigue, medication, and illness can also make performance very variable from day to day for this group (Curtis & Donlon, 1985), which made recording over several days preferable. Collecting evidence over several days meant that evidence could be combined at the end of the period to provide a more dependable picture. The previously complex recording sheet (appendix nine) was reduced to two pages to be filled in each day, one which outlined the teaching/prompting schedule, and a second which asked the teacher's opinion as to the success of prompts of different intensities and modalities. A copy of the record sheet used is in appendix ten. The order of the prompts used was altered each day, as described above, but otherwise the sheets were the same. The specific prompting regime used was thus laid out on the record sheet, so that teachers did not have to remember it, but reminded themselves of it as they worked through and recorded.

An example of a completed record sheet is given in appendix eleven.

One task is described in some detail here as an example and to illustrate the methods used; one task is also described in the phase two (chapter seven) and phase three (chapter eight) studies, although more briefly.

***Figure eight Picture of Usha's box***



### **6.5.1 Usha's task**

Usha had some useful vision and hearing, and was 3 years old. After discussion with her teachers, a task was devised for Usha. She used a twelve inch by four inch box covered in shiny paper. The box had two extra 'levers' on each side, which when pushed down, levered off the lid. It was thought that Usha would not be able to take off the lid otherwise. Inside was a small scarf covering a favoured toy, a holographic spinning top. For five days, Usha's teacher worked with her for about fifteen minutes. She first placed the box in front of Usha, to see what she would do. Then she used the prescribed series of prompts written down on the recording sheet to help Usha through the task. The first level of prompts were to gain Usha's attention to the task. The visual prompt at this level was to point to the box, the auditory prompt was to tap the box lid, and the tactual prompt was to place her hand on the box. The second level of prompts provided assistance in achieving the task.



The visual prompt at this level was for the adult to move her hands down towards the levers (a gesture), the auditory prompt was to say 'Look in the box, Usha', and to make a noise with the box, perhaps by banging the levers, and the tactual prompt was to put the child's hand on the relevant part of the object – the levers. The final level of prompts was a model of the completion of the task. The visual prompt at this level was for the adult to complete the task, by pressing the levers, knocking off the lid, pulling out the scarf and finding the toy while the child watched. The auditory prompt at this level was for the adult to describe the process of opening, for example, "Push the sticks, push the lid, pull the scarf," using other sound effects as appropriate. The tactual prompt at this level was for the adult to complete the task with the child's hands over or under hers.

### **6.5.1.1 Video recording**

A video was taken of one of the teaching sessions with Usha, for a measurement of inter-observer reliability. Two other observers watched the video and compared the record with the teacher's, and a match was scored by a fourth professional (see above 5.3.2.1, where some difficulties with using different observers and video evidence are also discussed). 82% of the records overall agreed. The table is set out in appendix five.

### **6.5.1.2 Analysis of record sheets**

The data recorded by this group was evaluated to interpret the children's learning style in relation to prompt modality preference, and issues both for individuals and general points from the evidence are discussed below.

The individual record sheets were analysed by judging children's responses to prompts in different sensory modalities as positive or negative. Positive responses were those where the child interacted with the objects in a way likely to increase information or learning, such as interest or sustained interaction with the equipment. These included: attention through looking, listening, or touching; attempts to interact with the equipment through searching, manipulating or mouthing; and attempts to complete the task through movement which achieved part (or all) of the task. Negative

responses were those which stopped interaction with the equipment, or indicated a wish to stop, such as pulling away from the equipment or the teacher's hands, or pushing away equipment. Where a child showed a negative response followed immediately by a more positive response, for example, a 'no' signal, followed by an attempt to mouth the objects, this was scored as negative. This was to ensure that the direct effects of the prompting, rather than overall factors concerned with the task, were recorded. Occasions when the child made no response were counted as negative. It may sometimes have been difficult for the teacher to recognise the difference between the child's action and her own during tactual/kinaesthetic prompts at all three levels (and of course, as discussed above in 5.3.2.1., even more difficult for those observing only video).

The children's responses to different prompt modalities are recorded in tables 13, 14 and 15 and the written comments below.

### **6.5.1.3 Data collection**

The tasks were intended to be presented to the three children once a day for five days. 13 records were completed of the 15 possible. The information given in the sheets differed from child to child and teacher to teacher. One teacher found herself able to present and teach the task in the structured format, while another found this difficult and produced more narrative recordings. Each record form had 21 possible responses, but teachers completed only ten with any consistency and only these have been analysed. Although the time period (five days) was short, ten responses could be recorded each day, allowing sufficient time for the child to show her strengths.

## **6.6 Results; children and learning styles**

### **6.6.1 Caroline**

Caroline was considered by her teacher to have useful but limited vision (category two), but did not usually respond to sounds, except when they were very loud or unexpected (category one).

### **6.6.1.1 Aspects of style from interview**

Caroline was learning to work with adults in her classroom, but had a clear preference for her teacher. She was certainly more interested in adults than peers. Caroline was described as into everything and full of energy, but very self orientated. Her teacher reported that she led adults into the right way of teaching her, and that this right way included working with a familiar adult, being given confidence and having security in her environment.

In terms of successful learning, factors mentioned were positive reinforcement by praise from adults, consistency, and frequent opportunities to complete tasks. Caroline also preferred to wander around the classroom than to sit at a table, although sitting was required by her teachers.

Her teacher considered that:

*Caroline is much less conventional/predictable in her learning patterns than some pupils.*

This may mean that her teacher was thinking about learning style, even though she did not say in what way she was less predictable.

### **6.6.1.2 Ability and assessment**

Caroline's teacher had not carried out any formal assessments herself, although she did use day to day classroom assessment to see how Caroline was progressing through tasks. A mobility assessment had also been carried out (Stone 1995).

Caroline was attending a school for children with SLD, but her teacher considered and stated strongly that she believed:

*her learning difficulties are a direct result of her dual sensory impairment*

and that they were not due to any other brain damage or difficulty.

### **6.6.1.3 Prompt modality preference; Interview**

Caroline was considered to use vision as her leading sense. Although she did show some responses to sounds, she did not do this in learning contexts.

She was also seen using her tongue and hands to explore objects, showing she used tactual information. It was considered that Caroline found sound too transient to process.

#### **6.6.1.4 Prompt modality preference; taught task**

Caroline's task was to open a tea tin with a tool, in this case a bicycle tyre lever (see photograph in appendix 13). Caroline completed four sessions and 28 records were completed. These records are shown in table 13.

In the recorded responses Caroline showed:

9 positive responses and 2 negative ones to visual prompts (82% and 18%)

5 positive responses and 2 negative responses to auditory prompts (71% and 29%)

10 positive and no negative responses to tactual/kinaesthetic prompts (100%)

Her responses to tactual/kinaesthetic prompts were the most positive.

Her responses to auditory prompts were proportionately the most negative.

She did show positive responses to all three types of prompts offered to her.

She used auditory prompts least positively, but she used them more positively than negatively.

Her responses showed some patterns. She always responded positively to tactual/kinaesthetic prompts, and more often than not to other prompts, visual prompts being preferred to auditory ones.

#### **6.6.1.5 Comparison of taught task and other data**

Caroline's teacher considered that she used vision as her major route to learning, and that hearing was not very useful to her. She was considered to use tactual senses effectively, but these were self directed rather than facilitated by a teacher. In fact Caroline's responses to all prompts were sometimes positive. The responses showed that she was in fact very successful at using tactual prompts at all levels, and that she used auditory prompts quite effectively, which her teacher did not expect.

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Caroline made some small progress with the task she was working on, and missed one session. The teacher suggested the slow progress might have been because she had been unwell the previous week, or that the teacher's absence had disturbed her continuity and security. She also stated that the task may have in fact been too difficult for Caroline, and that the inbuilt reward was not sufficiently motivating. However, the small amount of progress shown by Caroline, and the fact that she did not try to use the tool at all, despite prompts, may indicate that she does not show the speed or capacity for learning expected by her teacher.

**TABLE 13 CAROLINE'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	4				4
Visual prompts		4 exploration	3 to complete, or maintain interest 1 cast	1 n/r 1 performed part 1 stopped at certain point	<b>+ve response</b> 9 <b>-ve/no response</b> 2
no record				1	1
Auditory prompts		4 exploration	1 n/r 'until intervention'	1 n/r 1 completed part	<b>+ve response</b> 5 <b>-ve/no response</b> 2
no record			3	2	5
Tactual prompts		4 exploration	3 explored (once cast when assistance withdrawn)	3 completed part	<b>+ve response</b> 10 <b>-ve/no response</b> 0
no record			1	1	2
Total positive and negative response					<b>+ve response</b> 24 <b>-ve/no response</b> 4 <b>no record</b> 12

n/r = no response

## 6.6.2 Grace

Grace's teachers considered that she had rather poor vision (category two), but responded better to sound (category four):

*she just turns her vision off, because it is not reliable enough,... she doesn't use it ... whereas... she's hearing impaired, but she uses it so well.*

### 6.6.2.1 Aspects of style from interviews

Grace was described as a child who liked her independence and who learnt best if just allowed to experiment:

*let her go, ... just let her go...*

although she would accept facilitation for some things. The teacher working with her needed to prepare materials and the environment so that Grace could learn through her own actions, without the teacher intervention.

Grace became dependent on one person who could understand and interpret her effectively, or she became frustrated. She was described as able to take on some new situations:

*she settled really quickly (in nursery).*

### 6.6.2.2 Ability and assessment

No formal developmental assessments had been carried out recently, although the Affective Communication Assessment (Coupe et al. 1985) had been used when she started school.

Grace's teachers thought that she liked to do as much as she could for herself, and to be involved in all activities, but complex difficulties made access challenging:

*she likes to do normal things, she wants to do as much as she can for herself.*

These difficulties also were considered to hide her ability:

*because everything is so difficult for her, .... she was obviously bright.. but access...*

*I know she can do it, I can see she knows, it's giving that physical evidence that she can do it.*

### **6.6.2.3 Prompt modality preference; information from interview**

Grace was considered to be a child using her hearing well; but her vision was considered inconsistent and unreliable as a means of learning. Her use of tactual senses was also good:

*She's very tactile, with her hands.*

### **6.6.2.4 Prompt modality preference; information from taught task**

Grace was working on identifying a container from a selection to open (see photograph, appendix 13). She completed two sessions and another was abandoned after she became distressed. The teacher working with her considered that she was not very well the week she worked on this task. 20 records were completed for Grace, as shown in table 14.

In the recorded responses Grace showed:

4 positive responses and 2 negative ones to visual prompts (67% and 33%)

4 positive responses and 2 negative responses to auditory prompts (67% and 33%)

4 positive responses and 4 negative responses to tactual prompts (50% and 50%).

The analysis made no attempt to monitor the strength of a negative response, 'no response' and 'cross' being rated as the same. Obviously a rating of this nature would be extremely subjective; however, it is possible that the most negative types of response occurred in the tactual/kinaesthetic situations.

The table below gives more detail of Grace's negative responses.

Grace's pattern of response did not show a clear preference. Prompts in all three modalities brought positive attempts to complete the task. However, the highest proportion of negative responses was when tactual/kinaesthetic prompts were used. Only a small number of records were analysed and interpretation is therefore difficult. It appears however that tactual/kinaesthetic



prompts, especially at level three (hand over hand demonstration) may have been less preferred.

#### **6.6.2.5 Comparison of taught task and other data**

Grace was considered to use hearing as a major source of learning, rather than vision, which was considered unreliable. However, in this task Grace responded as well with hearing as with vision. Her teacher said that although she used tactual senses well, she preferred adults to leave her alone to learn by herself. Tactual prompts at level three led to negative results but she accepted some tactual prompts at levels one and two. As only a small number of records are available for Grace, it is possible that no consistent pattern had yet emerged from the data.

Since Grace only took part in a small number of sessions and not all of these were completed, it is not possible to compare the degree of learning she showed with the perceptions of staff that she learnt quickly, or with their understanding of her ability to complete the task.

**TABLE 14 GRACE'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	3				3
Visual prompts		1 look	1 vocalisation and attempt to communicate 1 touch (+ laugh) 1 n/r	1 n/r 1 mouth	<b>+ve response</b> 4 <b>-ve/no response</b> 2
no record		2			2
Auditory prompts		1 attention	1 'no' signal +mouth, + attempt to communicate 1 push away 1 n/r	2 handling, mouthing and attempts to co-operate	<b>+ve response</b> 4 <b>-ve/no response</b> 2
no record		2			2
Tactual prompts		3 mouthing and handling	1 smile, + visual attention 1 pull back return to mouth 1 n/r	2 'cross'	<b>+ve response</b> 4 <b>-ve/no response</b> 4
no record			1	1	2
Total positive and negative response					<b>+ve response</b> 12 <b>-ve/no response</b> 8 <b>no record</b> 7

n/r = no response

### **6.6.3 Usha**

Usha's teachers considered that she did respond to some visual stimuli (category two), but hearing was considered the leading sense (category three):

*we sometimes think it is very patchy... her vision*

*I would say she tends to use her hearing, over the vision, she relies more on her hearing.*

#### **6.6.3.1 Aspects of style from interview**

Successful learning for Usha was also considered to include time and repetition:

*if you gave her that time*

*you just have to sort of repeat it over and over...*

continuity and consistency:

*it is us being consistent still... and giving her time*

adult praise and enthusiasm; and working in the afternoon:

*she's definitely an afternoon person.*

#### **6.6.3.2 Ability and assessment**

Usha's teachers knew of no assessments that had been carried out. Their initial feelings when Usha started at school were that she was rather passive, and might not make much progress:

*when I first saw Usha I thought there's nothing...I didn't see anything*

These opinions were revised when she began to learn, firstly to use switches in the sensory room:

*there is something there, there is something to work on.*

### 6.6.3.3 Prompt modality preference; interview

Usha's teachers considered that she used hearing as her main channel for learning:

*she relies more on her hearing*

and described their teaching as involving auditory prompts:

*I've always done a lot of talking*

*she takes a lot of coaxing sometimes.*

Comments about her vision suggested that at this point (Usha was only three years old) they were not sure what she could see:

*can she actually make that out as an object there, but not actually see what it is...?*

They said that Usha did not like her hands or body touched, and because of negative reactions one teacher said:

*I try not to touch her.*

### 6.6.3.4 Prompt modality preference: taught task

Usha's box task is described above in 6.5.1. Usha's teacher in fact completed six sessions; in the final session Usha completed the task with no further prompts when the equipment was placed in front of her. However, only five record sheets were analysed (the sixth required no prompts so generated no records). 33 records were completed for Usha as shown in table 15.

In the recorded responses Usha showed:

5 positive responses and 3 negative ones to visual prompts (62% and 37%)

9 positive responses and no negative ones to auditory prompts (100%)

1 positive response and 7 negative ones to tactual prompts (12% and 87%)

Her responses to auditory prompts were therefore the most positive.

Her responses to tactual prompts were the most negative.

She showed positive responses to all three types of prompts, and she showed negative responses to visual and tactual/kinaesthetic prompts, but none to auditory prompts.

Her pattern of response, from this sample, showed a clear preference for auditory prompts. Auditory prompts always encouraged her to positive response, visual prompts often did, and tactual/kinaesthetic prompts rarely did.

#### **6.6.3.5 Comparison of taught task and other data**

Usha was considered by her teacher to learn primarily through hearing, and the record sheets indicate that all auditory prompts led to positive responses. The teacher said that Usha disliked being touched, and her responses to tactual prompts were mostly negative. Her teacher was less sure about her visual skills, but in the taught task she responded more positively than negatively to visual prompts. Her completion of the task on the sixth day was led by the visual stimulus of the object being placed on the table in front of her, with no further prompts required.

Usha's visual impairment was primarily cerebral rather than ocular in nature, and it is likely that she responds differently to visual stimuli from day to day (Crossman 1992, Jan 1993). Her responses to visual prompts were not consistent.

Although this was not a task designed to measure learning speed, Usha's independent completion of the task on the sixth day indicates that her teacher had estimated this correctly.

**TABLE 15 USHA'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
	5 looks				<b>+ve response</b> <b>5</b>
no record					
Visual prompts		1 n/r 1 look 1 touch	2 n/r 1 touch 1 attempt to complete	1 pull/touch	<b>+ve response</b> <b>5</b> <b>-ve/no response</b> <b>3</b>
no record		2	1	4	7
Auditory prompts		4 touches	2 touches 1 look	1 vocalisation 1 touch 1 full models	<b>+ve response</b> <b>9</b> <b>-ve/no response</b> <b>0</b>
no record		1	2	2	5
Tactual prompts		3 pulls away	3 pulls away (with 2 returns)	1 pull away 1 pull objects 2 full models	<b>+ve response</b> <b>1</b> (+2 later)      (+2 later) <b>-ve/no response</b> <b>7</b>
no record		2	2	1	5
Total positive and negative response					<b>+ve response</b> <b>20</b> (+2 later)      (+2 later) <b>-ve/no response</b> <b>10</b> <b>no record</b> <b>17</b>

n/r = no response

## **6.7 Results; development of methods**

These studies were effective in collecting evidence about learning style from the two sources used, the taught task and the interview, allowing some comparison to be made. The data collected from the interview was at least partly independent of that from the artificially structured taught task.

### **6.7.1 Interview**

The interviews yielded data regarding learning style, use of senses, ability and assessments. The information was valuable and provided sufficient detail, although it only presented the teachers' perspectives. The teachers gave detailed objective evidence about what children could do and how they had learnt it. One acknowledged that there remained a difficulty about what teachers thought a child could do and how others could see this:

*it's not just you, it's showing someone else that she knows what she is doing.... you can see it, because you know her, but if you say to someone, she can do this, it is harder for them to see it*

*I call it the mother syndrome, without me saying, I know she can do it, I can see she knows, it's giving you that physical evidence that she can do it.*

This indicates a possible problem with teachers' perceptions of children's abilities and what those children could actually achieve, which was peripheral to the present inquiry.

### **6.7.2 Taught task and assessment document**

The data recorded from the taught task was based more on direct evidence and was less interpreted by the teacher than that in the pilot study. The teachers were apparently able, at least to some extent, to overcome their own perceptions of children and record responses objectively. Some quantified information about children's responses to prompting in different modalities was analysed. The interview and the taught task data were used together to increase understanding of the child's style. Although not all the tasks were

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completed, the tasks appeared sensible and the learning was visible and recordable as it occurred.

The artificial style of teaching imposed by the teaching schedule may have been awkward for some teachers, and thus made the situation more difficult as a learning task for some pupils, perhaps not reflecting their typical learning.

It was possible, though for some teachers difficult, to fill in the recording document. The records for the teaching sessions were not complete. There were problems with absence of both children and staff, and also teachers did not always fill in all the records in a way which could be analysed. One session was (quite properly) terminated when a child became distressed, possibly in response to her teacher's unusual teaching manner.

Deafblind children often have physical and medical problems associated with their sensory impairments, and frequent absence from school is not uncommon in this population. Poor attendance at school hinders children from establishing routines and relationships which underlie learning and will in many cases be in itself a serious educational disadvantage.

The second sheet of the taught task assessment was completed only seven times, in most cases with minimal information, although some information not available elsewhere was recorded:

*appears to be re-calling activity from memory (Usha, day 5)*

*without prompts she would continue to mouth and feel, but no attempt was made to complete task (Caroline, day 4).*

It is possible that some records were not completed because the child did not respond and the teacher simply did not record it. It seemed likely (though I had no evidence) that on some at least of these occasions it was because there was no response to record, but the teacher did not know how to record this. To the teacher, 'no response' is not a useful category, as the teacher works on achieving success. To the researcher however, it provides valuable evidence. Some small adjustments would need to be made to the record sheet to address these issues.



The use of a video tape of one of the sessions was valuable in verifying the teacher's data. It is subject to weaknesses relating to the difficulty of observing actual responses and to the limited amount of data for comparison sometimes yielded. However, the correlation between the teacher and two independent observers was 82% showing it was robust.

## **6.8 Discussion**

### **6.8.1 Learning style**

The studies showed that two of the children (for whom there were sufficient data) did show learning style patterns which were reasonably consistent, and from which some general conclusions could be drawn, regarding their prompt modality preference. Their preferences were not always those which the teachers expected, nor were they always what might have been expected considering their perceived sensory impairments. Caroline, for instance, was considered to have no useful hearing, but responded to auditory prompts.

### **6.8.2 Assessment and ability**

The children's teachers had not used any published or formal assessment tools recently, nor did they know of any used by other people in relation to these children, save one mobility assessment (6.6.1.2.), and the use of an ACA when Grace entered school. The teachers in the phase one studies were not, apparently, using assessment to inform their programme planning, although teachers in response to the questionnaire had said this was an important aim of assessment activity. The assumptions of the staff were that the children all had learning ability, and Caroline was considered to have no inherent learning disability. This was not supported however either by her performance on the task or by her developmental functioning. A particular issue raised by Grace's teachers related to the ability of people who did not know the child to see the child's progress, and the child's inability to demonstrate this by action.

### 6.8.3 Common patterns in prompt modality preference and deafblindness

Deafblindness is a serious and major handicap which creates some common needs and might create common behaviour patterns (McInnes & Treffry 1982, Wyman 1986). It might be expected that the condition of dual sensory impairment would lead to a common response to sensory impairment, in particular that children whose distance senses were distorted and restricted might prefer tactual/kinaesthetic prompts.

For two of the children in this small sample (Usha and Grace), however, tactual/kinaesthetic prompts were actually the least preferred method of prompting. Only Caroline responded most positively to tactual/kinaesthetic prompts. There was also no single pattern of prompt modality preference. Usha responded most successfully to auditory prompting, while for Caroline this was the least successful form of prompt. There were also some similarities in responses, both Grace and Usha finding auditory prompts very successful, and tactual/kinaesthetic prompts the least helpful.

**TABLE 16 PREFERRED RESPONSE TO PROMPTS**

<b>Child</b>	<b>Most positive response to prompts</b>	<b>Least positive response to prompts</b>
Usha	auditory	tactual/kinaesthetic
Grace	auditory/visual	tactual/kinaesthetic
Caroline	tactual/kinaesthetic	auditory

Overall, therefore, the children did not show strong common trends as a result of their shared deafblindness.

#### **6.8.4 Teaching style**

Through the exploratory studies effective methods were developed to record information about the child's learning style in relation to prompts. These methods offered an efficient means of gathering relevant information.

The studies explored the child's preference for modality within a prompting schedule. The way in which the prompts were given was imposed. For some children, this style, as opposed to the typical multi-sensory prompts of the teacher, may have made the teaching so unnatural to both the child and the adult that it became a hindrance to learning. The teacher may have been giving a number of redundant prompts which could have proved distracting. In constructing the teaching sessions I was aware that for some children this might not reflect their typical classroom experience.

I became aware during the exploratory studies that there might be some children for whom prompting in any modality might be a very secondary or non-preferred way of learning. These children and their teachers would use other styles of learning. Grace was described as preferring to be '*left alone*' to learn. Her preferred learning style was described as exploring for herself and learning from direct manipulation of materials. I have heard other teachers of deafblind children describe children this way. Since Grace appeared to prefer a less intrusive teaching style, working with frequent prompts may have been both inefficient for her, and a disliked way of teaching, which did not contribute to learning success.

While aiming to examine learning style in the children with whom I was working, it remains clear that teaching style influences the way in which learning style can be seen, despite the teaching schedule and other efforts to overcome this.

Since all the children were educated in the same unit, at different times by the same teachers, it is possible that the children were in fact responding to the teaching style either of the unit or of the teachers themselves. The teachers all worked closely together, within the same curriculum framework and were responsible to the same management. To some extent they had similar

training influences on their teaching, and they also learned from each other about individual children. It is possible then that apparent similarities in the children's learning styles could be a reflection of a common teaching style that was used throughout the establishment. As in this case only one member of staff worked with each child, it is possible that the child's apparent learning style was in fact the individually preferred teaching style of the teacher. To counteract this effect, in the second and third phase studies, a wider range of settings was used.

### **6.8.5 Prompting**

There are other aspects of prompting which were not addressed in the exploratory studies, nor in the phase two and phase three studies. Some of these issues as relating to prompts would be:

1. The intensity of prompts used by individual teachers. It would not have been possible to standardise these given the variety of need and ability between children.
2. There was no comparison of intensity between visual, auditory and tactual/kinaesthetic prompts. Visual prompts using bright shiny objects could always be more intense than auditory prompts by teachers with quiet voices, but it is not possible to know how these are perceived by the child.
3. There may be an inherent difference in the intensity of prompts, for example, that physical prompts are always the most intense. It may be that children with the least degree of cognitive function learn best from physical prompts for this reason, but this could be due to the degree of their sensory impairment. There could be profitable further study in this area.
4. There are also issues concerning the use of different styles of physical prompting, hand over hand (physically manipulating children's hands) and hand under hand prompting (allowing the child to follow the adult's hand movements), these different styles being described by Chen et al.

(2001). Some deafblind children, who may be described as 'tactile defensive' may reject manipulation of their hands, but allow their hands to follow their teachers' hands.

### **6.8.6 Assessment of learning style**

The studies in phase one and the responses to the survey of practice for teachers in assessment, when combined together offer some key ideas for the development of the inquiry. The questionnaire indicated that while a number of teachers did say that they assessed learning style, there was no clear idea of what learning style was in this population, and in most cases it was not differentiated from teaching style. Assessment was predominantly related to the acquisition of skills.

### **6.9 Conclusion and summary**

The studies reported in this chapter showed that meaningful information could be gathered about children's individual learning styles over a short period of time. The studies showed that it was possible to deliberately distance the learning task from the teacher's typical style and perceptions, thus giving the information dependability in its own right. The task did not take up unrealistic amounts of time for the children or their teachers. Two of the children appeared to enjoy it, although the third was merely tolerant. Although data was collected about only three children, and only 13 occasions, this proved sufficient to draw some conclusions about the two children who completed most of the sessions. The structured teaching approach had made the systematic recording of information possible, although it may have contributed to the reluctance of one of the children to take part.

The studies had shown the value of this type of assessment of learning style. Learning style in relation to prompt modality preference could be identified, and was individual to the child rather than necessarily related to sensory impairment or the effects of deafblindness. The assessment of this aspect of the child's learning was of potential benefit to the child. However, it did not provide an answer to the question:

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- Can such an assessment be used to improve teaching and learning?

There was no opportunity to see if the evidence could be used in a practical, more natural, way to enhance teaching and learning for the child. Although the results of the assessment were given to the teachers, this alone might not have provided sufficiently strong evidence to overcome what they already believed about children's learning. Therefore, in phase two of the studies, the already valuable prompt modality preference assessment will be used to ascertain learning style, but this will be followed by an attempt to translate the assessment information into practice through using a second task. The second phase studies are described in chapter seven.

## Chapter seven

### **Phase two studies**

He ain't got no distractions	He always gets a replay
Can't hear those buzzers and bells	'N never tilts at all
Don't see no lights a flashing	That deaf, dumb and blind kid
He plays by sense of smell	Sure plays a mean pin ball!

Pete Townshend (1969) Tommy

#### **7.1 Introduction**

Phase one of the child studies had demonstrated that learning styles could be seen in the group of pupils I was studying. The methods I had used, a taught task and an interview, to assess learning style in relation to prompt modality preference had been effective. They had not placed too many demands on the teacher or pupils. Despite the possible drawbacks of short time span, artificiality of task and the individualities of the children, the information gathered from the structured taught task was meaningful. The revision of the taught task to focus on prompt modality preference had allowed for increased independence between the teacher's perceptions and the child's responses, and had shown that the child's preferences were not always those expected by the teacher. The studies in phase one had demonstrated consistent preferences through assessment, but had not yet answered the question:

- ◆ Can such an assessment be used to improve teaching and learning?

The child studies in phase two were designed to provide answer to this question. There were two aims for this phase of the inquiry:

- ◆ to establish whether the learning style preference of deafblind children in relation to prompt modality preference could be used to improve teaching and learning for the pupils.

- ◆ to extend the number of children involved to support the contention that the prompt modality preference aspect of learning style was relevant to them. Up to this point there had been data only on four children.

In order to investigate the use of assessment to improve teaching and learning, a second task was used with the children in phase two. The second task was taught within the child's classroom routines, but matching the child's learning style preferences in relation to prompt modality.

The studies in phase two included an interview with the child's teacher, and a taught task assessment as before, but also a second, less structured task, designed to show how the assessment of learning style could be applied in practice in the classroom, to improve teaching and learning. This addition to the methods is described below in 7.2.4.

## **7.2 Participants**

Five children, Noluthando, Satya, Helen, Debbie and Alice, and their teachers participated in the phase two studies. The children all had dual sensory impairments, and attended two different schools. Five teachers were involved, one of whom had also been involved in phase one. All the children except Helen could pass objects from hand to hand, Helen was developing this skill. None had any formal language, although two apparently understood a few picture symbols and possibly a few signs. Summary information relating to sensory impairment and education is presented in table 17.

**TABLE 17 SUMMARY INFORMATION ON CHILDREN IN THIS PHASE.**

	Visual impairment category	Hearing impairment category	Age	Key stage
Helen	two (limited useful vision)	two (limited useful hearing)	12	3
Debbie	four (significant useful vision)	two (limited useful hearing)	8	2
Alice	three (useful vision)	three (useful hearing)	7	1
Satya	three (useful vision)	one (no useful hearing)	8	2
Noluthando	three (useful vision)	one (no useful hearing)	14	4



Further details of the children's sensory impairments are given with the results for each child.

### **7.2.1 Interview**

As previously, the interview concerned the child's use of sensory information, the teacher's perception of the child's ability and how this had been assessed, and the child's learning successes and difficulties. For the teacher who had participated before, information about professional development was carried over from the previous interview, with her agreement. The teachers described significant aspects of teaching and learning, including information about modality preference, which probably relate to style and these are reported in the results for each child. They indicated that they sometimes used these to create a good learning environment for the child, but it appeared that there were few examples of altering teaching to match aspects which I was now considering to be learning style.

### **7.2.2 Taught task**

As in phase one, a task was devised for each child together with the teacher. The tasks met the criteria described before in 6.5.; they were intended to be motivating, achievable, not too time consuming, related to opening something, novel, and made use of multiple modality cues. The taught task was undertaken as previously, a prompt schedule with different modalities was used as the record sheet. However, the recording sheet was altered in two ways. Firstly the second sheet, which had hardly been used, was omitted. Secondly, NR was included on the prompt sheet in each place where a response was expected (NR= no response). The teacher was instructed to ring NR if the child made no response. This was intended to increase information about lack of response, where teachers may previously have written nothing on the sheet because the child did nothing. An example of this sheet is in appendix ten.

The five children completed 21 days of tasks between them. Two children completed the suggested tasks very quickly (within one day and two days).

Once again, the amount of information available from the sheets varied from teacher to teacher. The individual record sheets were analysed by judging the responses as positive or negative, with one difference from the analysis described above in 6.5.1.2. Because three of the children in this phase engaged in repetitive behaviours, 'sustained interaction' with an object might not be an attempt at completing the task. Repetitive behaviours which were not indicators of attempts at a task were identified with the teacher and could be recorded subsequently as 'no response'. As an example, Alice's task is described below.

***Figure nine Alice's biscuit barrel***



### **7.2.3 Alice's task**

A commercially available biscuit barrel was used with Alice. The barrel had a transparent base, so Alice could see what was inside. A small pump sealed the barrel with a vacuum. To release the vacuum a button on the lid had to be depressed, and the lid then came off easily. The lid was enhanced with orange paper, with a refractive silver sticker on the button. The lid was tapped to provide auditory cues and the button was indented slightly which gave it a distinct tactual quality. The teacher pumped out the air each time the barrel was opened. Alice particularly liked toys which squeaked, so a squeaky ball was placed inside.

### **7.2.4 Second task**

The phase two studies used a new method, a second task. Lane (1996) used a second task in his study of verbal and physical prompting with learners with visual impairment and complex needs. In his study after learning a task in one of two conditions, physical prompting alone or physical and verbal prompting together, the prompting strategy which had been most successful was used for learning a second task with half of the participants. This second phase showed accelerated learning when the preferred prompting regime was used alone. Farrenkopf et al. (1997) also used a child's preferred prompt as the final intervention in a study determining the best teaching approach for a deafblind child, and this also increased successful learning. These studies provide additional evidence of the existence of individual learning styles (although this is not how the authors described their studies) and the value of applying these to new learning.

In this inquiry, the assessment task was taught in a highly structured way, using an artificial prompt schedule and a non functional task.

The second task was intended to:

- ◆ provide a more natural teaching and learning situation for both pupil and teacher (for example McLarty 1991, McInnes & Treffry 1982). Farrenkopf et al. (1997) also used a natural environment for their prompt preference study.
- ◆ apply the findings relating to prompt modality preference to another task to see if teaching was more successful than before.

Some teachers and probably some children had found the artificial style of the first task difficult to maintain. The second task was intended to be integrated in the child's routine. The teacher chose an activity which had been part of the child's routine, but which she had not learnt without intervention, and we designed the task together. Tasks the child had failed to learn despite previous teaching were not included. Using the information from the assessment, the teacher and I agreed on appropriate prompts, for example, enhancing visual information and prompts if this had been preferred, and

omitting manual prompts where these were less effective or appeared aversive.

The teacher recorded this task as a narrative, writing down the child's responses immediately after the teaching session. Because they had already filled in the record sheet, the teachers knew what the task was about and were thus able to record appropriately.

The teacher used her more usual style, not focusing on using only one modality, but added the enhanced prompts of the preferred learning style. The outcome was expected to be more rapid achievement in the task than previously expected. Three children, Debbie, Alice and Helen and their teachers completed a second task.

### **7.2.5 Video recording**

It was intended that a video of each child would be taken of the assessment task. However, one child was videotaped twice and one not at all; one video could not be analysed as the child did not stay at the task. Four video tapes of three children were used as described above in 5.3.2.1 to provide inter-rater reliabilities. An overall match of 85% was recorded for these four tapes. The tables are presented in appendix five.

## **7.3 Results; the child and learning style**

All the teachers talked about how they supported successful learning in these pupils, relating to both sensory information and to other factors.

### **7.3.1 Helen**

Helen's teacher described some responses to hearing (category two), and response to close or otherwise cued visual events (category two):

*she does respond to.... certain voices, certain accents*

*you have to be right in front of her*

*the response to the visual clue didn't come until there was something else as well ("something else" referred to a sound cue).*

### **7.3.1.1 Aspects of style from interview**

Repetition in activities and confidence in other people were reported as supporting Helen's learning. Her teacher thought that one of the most important factors in her learning was the person she was working with, and that this included Helen's confidence in the person:

*I think really that Helen 's response is to the person, I think that is what gets the best response from Helen, it's the person.*

She also described how Helen used repetitive movement to explore activities, such as banging.

### **7.3.1.2 Ability and assessment**

Helen's teacher had not carried out a formal assessment. She believed that Helen was of very low learning ability, but:

*because she is a happy lass and she will smile and she'll laugh, it gives the impression that perhaps there is more there than there is.*

This, she believed, had caused her to overestimate Helen's learning ability in the past.

### **7.3.1.3 Prompt modality preference; interview**

Helen's teacher described how Helen needed multi-modal stimulation to help her to learn:

*I think she needs total clues, I think she needs the total message, I think she needs you in front of her like that, I think she needs the vision, the sound, tactile, and anything else that is going.*

### **7.3.1.4 Prompt modality preference; taught task**

The target for Helen was to tap the skin of a tambourine (see photograph in appendix 13). The teacher working with Helen completed six days of records on the task, because she believed that Helen was becoming more successful. In fact the recorded evidence did not support this completely, with three attempts at the task on the first day, five on the second, one on the third, and three on the fourth, four on the fifth day and two on the sixth day. This

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teacher also consistently recorded an action and a repeat for prompts at most of the stages. These records are shown in table 18.

In the recorded sessions Helen showed:

6 positive responses and 17 negative ones to visual prompts (26% and 74%)

5 positive responses and 18 negative ones to auditory prompts (22% and 78%)

11 positive responses and 13 negative ones to tactual prompts (46% and 54%)

Helen did not respond on many occasions, and she also banged the table, which was not considered an attempt to engage with the task. Her response to most prompts was negative. She successfully completed the task three times following visual prompts and three times following auditory prompts, and six times following tactual prompts. Attempts and successes occurred six times to the first level prompt, eight times to the second level prompt, and six times to the third, indicating that she was slightly more likely to respond to an assistance prompt than a model or attention prompt, but level of prompt was less consistent than the type of prompt used.

Helen's responses show that she responds best to tactual prompts, with most successful responses and least negative responses following these prompts.

### **7.3.1.5 Comparison of taught task and other data**

Helen's teacher described Helen's need for different sensory stimulation to attract her attention and assist her learning. She responded to single sensory prompts negatively more often than positively, although it is not known whether she would have responded better to the '*total message*' as her teacher said she might. In this task, tactual prompts were clearly the most successful. Helen also had many repetitions of the task, and was working with her teacher, with whom she was confident, both also factors her teacher believed led to success. Helen was able to complete the task on several occasions, but not consistently, perhaps demonstrating the difficulty in learning described by her teacher, who thought that her ability was sometimes overestimated.

**TABLE 18 HELEN'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
	2 looks 1 touch 1 n/r				<b>+ve response</b> 3 <b>-ve/no response</b> 2 <i>attempt</i> 1
no record	2				2
Visual prompts		5 n/r 1 look vocalise	5 n/r 3 hit tray/blanket 2 touched skin	2 n/r 2 tap tray 3 hit skin	<b>+ve response</b> 6 <b>-ve/no response</b> 17 <i>attempts/successes</i> 5
no record					
Auditory prompts		4 n/r 1 looked 1 hit skin	6 n/r 1 hit tray (blanket) 1 vocalise 2 touches	5 n/r 2 tap/scratch tray and vocalise 1 touch	<b>+ve response</b> 5 <b>-ve/no response</b> 18 <i>attempts/successes</i> 4
no record			3	2	5
Tactual prompts		4 n/r 1 hit tray 1 hit skin	3 n/r 2 hit tray 2 hand to jingles 4 touches (+ 1 when refixing)	2 n/r 1 hit tray 1 to jingles 3 touch	<b>+ve response</b> 11 <b>-ve/no response</b> 13 <i>attempts/successes</i> 11
no record			1	1	2
Total positive and negative response					<b>+ve response</b> 25 <b>-ve/no response</b> 50 <b>no record</b> 2 <i>attempts</i> 20

n/r = no response

NB Tapping the tray is a common activity for Helen and is not likely to indicate positive attempts at the task.

### **7.3.1.6 Second task; Helen**

Helen's task was to reach for her toothbrush, placed in front of her in a toothmug. Because Helen responded best to tactual prompts, and had little success following visual or auditory prompts, a full assistance model, hand over hand completion of the task, was used. The toothbrush was then replaced for Helen to repeat this herself.

### **7.3.1.7 Evidence**

Evidence was recorded for five days for Helen. In this period, despite several trials on some days, Helen did not attempt to reach for her toothbrush. On one occasion she held the toothbrush for six seconds, following the prompt, which was considered by her teacher to indicate some success. On one further occasion she tapped the beaker. For Helen, the use of the additional prompts over five days did not lead to measurable success. Helen was 12 years old and was still developing passing objects from hand to hand, showing slow development, and it is possible that five days was insufficient time to teach her the task.

## **7.3.2 Debbie**

Debbie's teacher reports that she has a moderate-severe hearing loss, for which she does not tolerate aids (category two), and that she is using her vision well (category four):

*actually she makes good use of (her hearing), when the motivation is there*

*functionally she is using her vision very well.*

### **7.3.2.1 Aspects of style from interview**

Debbie's learning was dominated by her need to engage in activities she found motivating. All was subjugated to her repetitive movements:

*can I swing it, can I flick it, can I lick it?*

which apparently:

*she does .... to people too.*



Other aspects of her learning mentioned by her teacher included relationships with people, independence, movement, and routine. She was generally passive when others were involved and did not like to have others around her at any time. Her teacher said she did not seem to learn from hand over hand shaping techniques. She learnt well from routine and in situations where she felt secure. She preferred to be always on the move, and it was considered that moving helped her to use her vision and hearing to her best advantage.

### **7.3.2.2 Ability and assessment**

Debbie's teacher had never carried out a formal assessment, although a previous teacher had. She described her difficulty in understanding Debbie's ability, because she sometimes did things which:

*seem to be quite clever, ... then she does seem to revert back to some extremely basic behaviours.*

### **7.3.2.3 Prompt modality preference; interview**

Debbie's teacher described how Debbie used both vision and hearing effectively to help her to learn. However, she noted that Debbie:

*almost needs to be active and moving for her to really use her vision*

indicating the interaction between her preferred state of motion and her sensory skills. Debbie also used movement and manipulation to explore objects and people.

### **7.3.2.4 Prompt modality preference; taught task**

Debbie's teacher completed five days of records. Debbie's attention swiftly turned to the equipment, rendering attention level prompts unnecessary. She used a sound making toy, where she pulled out a ring to activate the sound. A photograph of the equipment is in appendix 13. On some occasions she succeeded at the task and required no further prompts at all. Debbie's repetitive swinging of objects, which she did with all objects almost continually, did not indicate positive engagement with the task and was scored as a negative response. These records are shown in table 19.

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In the recorded responses, Debbie showed:

7 positive responses and 9 negative ones to visual prompts (46 % and 54%)

1 positive response and 10 negative ones to auditory prompts (8% and 92%)

10 positive responses and no negative ones to tactual prompts (100%)

Her responses to tactual prompts were therefore the most positive.

Her responses to auditory prompts were the most negative.

She showed some positive responses to all three types of prompts, but no negative responses to tactual/kinaesthetic prompts. Her teacher also wrote on the record sheet:

*prompts always needed to be full and tactual.*

However, she also said, on the second day that Debbie:

*preferred to do it independently than be helped by me.*

### **7.3.2.5 Comparison of taught task and other data**

Debbie was described as using both hearing and vision to learn, although the dominance of manipulation and motivating repetitive activities was also noted.

In fact, Debbie hardly responded to auditory prompts. Despite the fact that her teacher described her as very passive, and thought:

*she didn't really seem to cotton on, and then start initiating herself*

Debbie responded very successfully to tactual prompts, especially hand over hand modelling. Although seeing the toy attracted Debbie's attention, visual prompts were not the most useful means of teaching her.

**TABLE 19 DEBBIE'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record					5
Visual prompts		3 n/r 1 reach 1 attention	2 n/r 1 play 3 attempts	3 n/r 2 attempts	<b>+ve response</b> 7 <b>-ve/no response</b> 9 <i>attempts/successes</i> 5
no record/other		(2 already interested)		1 (had succeeded)	3 3
Auditory prompts		1 located by sound 1 play 1 n/r	1 flicking 3 n/r	1 play 3 n/r	<b>+ve response</b> 1 <b>-ve/no response</b> 10 <i>attempts/successes</i> 0
no record/other		1(+1 already interested)	(1 no longer requires prompts)	(1 no longer requires prompts)	4
Tactual prompts		2 attention	1 felt ring 3 attempts 1 success	2 attempts 2 successes	<b>+ve response</b> 11 <b>-ve/no response</b> 0 <i>attempts/successes</i> 9
no record		1 (+ 2 already interested)		1 (had succeeded)	4
Total positive and negative response					<b>+ve response</b> 18 <b>ve/no response</b> 20 <b>no record</b> 11 <i>attempts/successes</i> 14

n/r = no response NB. 'Playing' was scored as negative unless she tried to use the equipment by pulling out the ring.

### **7.3.2.6 Second task; Debbie**

Debbie's task was embedded in her daily routine, and was to take her incontinence pad from the box by the toilet door into the toilet. The teacher was asked to attract her attention by visual prompts, and then to use tactual prompts, as these were Debbie's preferences from the assessment task.

### **7.3.2.7 Evidence**

Seven days of recording were made. Debbie's attention to the visual prompt to the box appeared to improve over time. During the last session, Debbie responded to a gestural prompt made from three feet away. She then picked up the pad immediately with no further prompting. The use of appropriate prompts for both attention and completion of the task allowed this child to complete the task within a fairly short period of time, and this task continued into her daily routine.

### **7.3.3 Alice**

Alice's teacher described how she would not tolerate aids, despite a moderate/severe hearing loss (category four), and said:

*she actually uses her hearing really well.*

Medical reports said that she had a cortical visual impairment. Her teacher explained that the extent of this was not clear (category three), and that it was:

*difficult to know whether she is actually sort of processing what she is seeing, and the extent to which she has a visual impairment.*

Cerebral visual impairment, as opposed to ocular impairment, is included in the definition of dual sensory impairment adopted for this inquiry and given at 1.6.1.1.

#### **7.3.3.1 Aspects of style from interview data**

Alice's teacher commented on working with people, movement, motivation, the use of small steps and familiarity as factors in Alice's learning. Alice was described as unmotivated by other people in learning situations. Her own interests or an activity she found motivating supported her learning, but she

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could not be persuaded to do things teachers wanted her to do. Alice preferred to move around a room either while engaged in learning, or between tasks:

*(she) wanders around and comes back, to have some more, then she'll get up again.*

Alice needed familiar people and settings to learn effectively and was nervous in unfamiliar situations. Her teacher used learning goals with very small steps.

### **7.3.3.2 Ability and assessment**

Alice's teacher had not carried out any formal assessment with her, although a previous teacher had. The teacher believed her initial expectations may not have been high enough:

*yes I actually think she's got a lot more about her than perhaps on the surface it appears, ...she'll do things that will really surprise me sometimes.*

### **7.3.3.3 Prompt modality preference; interview**

Alice's teacher believed that listening motivated her learning, and that she used vision well in the classroom. She also worked with Alice in a withdrawal room to minimise distractions. The teacher described using demonstration and small physical prompts to help her complete an action, as in the following where she shows Alice how to get out of the ball pool:

*then I showed her myself, I showed her how to lift her leg over, and then I actually touched her leg, and encouraged her to put her leg over.....I physically helped her to do it the first time, but the next time when she was in there she did actually get out completely on her own.*

### **7.3.3.4 Prompt modality preference; taught task**

Alice's task is described in 7.2.3. The records for five days are shown in table 20.

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The recorded responses for Alice showed:

10 positive responses and 5 negative ones to visual prompts (67% and 33%)

12 positive responses and 2 negative ones to auditory prompts (86% and 14%)

11 positive responses and 3 negative ones to tactual prompts (79% and 21%).

Alice made good attempts to complete the task thirteen times; five of these were in response to visual prompts, five to auditory prompts, and three to tactual prompts. Her responses to tactual prompts were also sometimes very negative, as she resisted and pulled away. Alice's most positive responses were to auditory prompts, and there were fewer negative responses to these prompts. Although all the sensory modalities appeared successful, the most negative responses were to visual prompts.

The record sheet shows, however, that hand over hand (tactual prompting) was used on several occasions alongside other prompts. In fact, it appears the most successful prompts followed hand over hand manipulation (a tactual prompt).

### **7.3.3.5 Comparison of taught task and other data**

Alice's teacher considered she used both vision and hearing effectively in the classroom, although the teacher also used physical prompting. The records show that she did respond almost equally well to all types of prompting, although she did sometimes pull away from tactual prompts. In fact her visual responses seemed the least reliable, perhaps due to the nature of cerebral visual impairment (see 6.6.3.5.).

Alice's possible preferred learning methods, involving movement, were not available to her during this task, although the motivation of obtaining a highly desired object may have been influential. The task itself was structured so that small steps could be used. Alice's teacher judged her learning speed well, as she completed the task occasionally following prompts, with increasing amounts of success during the later days.

**TABLE 20 ALICE'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
	1 request for assistance 4 physical involvements				<b>+ve response</b> <b>5</b>
no record					
Visual prompts		2 watched 1 n/r 2 vocalise + physical	1 retracted hands 1 n/r 2 physical manipulation (hoh?) 1 throws on floor	1 played with 1 n/r (minimal) 3 watched, attempted	<b>+ve response</b> <b>10</b>  <b>-ve/no response</b> <b>5</b>  <i>attempts/successes</i> <i>5</i>
no record					
Auditory prompts		1 vocalise – door 1 'listened' 3 physical movement,	1 n/r 1 watched 3 attempts	1 touch 2 attempts (1 with hoh?) 1 watch/listen	<b>+ve response</b> <b>12</b>  <b>-ve/no response</b> <b>2</b>  <i>attempts/successes</i> <i>5</i>
no record				1	1
Tactual prompts		2 physical manipulation 1 pulled away (returned) 2 physical,+ ask for help	1 stilled (listen?) 2 pull hands away (1 return) 1 attempts, but asks for help 1 attempt, uses mouth	4 co-operates, each time, completes part independently afterwards	<b>+ve response</b> <b>11</b>  <b>-ve/no response</b> <b>3</b>  <i>attempts/successes</i> <i>6</i>
no record				1	1
Total positive and negative response					<b>+ve response</b> <b>38</b> <b>-ve/no response</b> <b>10</b> <b>no record</b> <b>2</b> <i>attempts</i> <i>11</i>

n/r = no response





### **7.3.3.6 Second task; Alice**

Alice's task was to undo the zip of her school bag, take out her home school book and pass it to her teacher when she arrived in school in the morning. Alice's teacher made two adaptations to the task, adding a keyring to make the zip easier to pull down, and covering the book in silver. Alice's teacher was asked to concentrate on using auditory and physical prompts; verbal prompts to gain attention and direct the task, physical prompts where necessary to achieve it.

### **7.3.3.7 Evidence**

Eleven days were recorded. Alice continued to need a verbal prompt to gain her attention and physical assistance to pull down the zip which she found difficult. Although the keyring was intended to make this easier, Alice did not succeed with this, possibly because the zip was too stiff. However, she was able to follow the verbal prompt to give her book to a teacher. The incidence of mouthing the book decreased. On the tenth day, her teacher covered the book in silver. On the last day recorded, Alice took the book from the bag and handed it to her teacher with no further prompting. Whether the silver cover was responsible for this success alone is not possible to say. At the end of ten days Alice was completing one task and attempting the second part of the task, and these responses would now become part of her daily routine. Although Alice had used prompts in all three modalities successfully, the prompts chosen for this second task were different from those her teacher previously chose. The enhanced use of verbal prompts appears to have been at least partly effective in her completion of the second part of the activity.

### **7.3.4 Satya**

Satya's teacher describes her as profoundly deaf (category one), but responsive to many visual environmental stimuli (category three):

*even aided she doesn't appear to use any hearing*

*(she) appears to use her vision well ..... she seems to see what she needs to see.*

#### **7.3.4.1 Aspects of style from interview**

Satya's teacher discussed her relationship with adults, independence and self motivated learning, the use of movement, and her enjoyment of novelty.

She used adults as tools and ignored other children in the class. Satya appeared unmotivated by most tasks, especially school activities, but she learnt to do things almost independently of her teachers, by watching:

*much of Satya's learning is sort of incidental, sort of environmental.*

Satya however enjoyed new things happening in school. She was also a:

*very active, bouncy child*

who preferred to move around school, for example, learning to carry messages had been a successful activity.

#### **7.3.4.2 Ability and assessment**

Satya's teacher had not carried out any formal assessments. She said that Satya appeared not to have made much progress in some areas, and she thought this might indicate that Satya appeared more able than she in fact was.

#### **7.3.4.3 Prompt modality preference; interview**

Satya's teacher reported on learning from watching or demonstration. However, Satya did not appear to use symbols or pictures well (in fact she preferred to lick symbol charts!).

Satya was believed not to benefit from the use of auditory stimuli, and her teacher said she sometimes used hand over hand techniques.

#### **7.3.4.4 Prompt modality preference; taught task**

Satya's task involved opening a tea tin with a lever. A picture of this task is in appendix 13. Satya completed only two days of the task, she learnt it very swiftly, and then teaching was abandoned. No information was recorded on assistance prompts, and the evidence showed that Satya in fact remembered the task and attempted it each time it was presented, with almost immediate success. A possible negative response to tactual prompts may have been

because Satya was bored by the task. It appears that Satya responded well to prompts in all modalities. A tactual prompt actually helped her to achieve success initially, but because it was the third prompt, this success could have been the result of repetitions in successive modalities. On the second day, Satya followed the first gesture level prompt (auditory) by succeeding in the task. The results in relation to prompt modality preference must be interpreted with caution, as there were so few. This limited evidence is laid out in table 21.

### **7.3.4.5 Comparison of taught task and other data**

The taught task data does not provide sufficient information to make any significant statements about Satya's learning. She appears to have been successful in using all three modalities, although other factors (order, previous learning) are likely to have affected this. Satya apparently learnt the task much more quickly than was expected by her teacher.

Satya did not complete a second task.

**TABLE 21 SATYA'S RESPONSES TO PROMPTS**

Prompt type and form	attention	gestures	responses	
Visual prompts	1 handed back tin	1 attempt 1 success	<b>+ve response</b>	<b>3</b>
			<b>-ve/no response</b>	<b>0</b>
no record	1			1
Auditory prompts	2 looked/shook tin	1 attempt 1 success	<b>+ve response</b>	<b>4</b>
			<b>-ve/no response</b>	<b>0</b>
no record			5	5
Tactual prompts	1 felt tin	1 success 1 n/r *	<b>+ve response</b> (+ 2 later)	<b>2</b> (+ 2 later)
			<b>-ve/no response</b>	<b>1</b>
no record	(1 incomprehensible record)		2	2
Total positive and negative response			<b>+ve response</b>	<b>9</b>
			<b>-ve/no response</b>	<b>1</b>
			<b>no record</b>	<b>2</b>

n/r = no response

\* at this point, Satya had already achieved the task, and so walked off when it was re-presented

### **7.3.5 Noluthando**

Noluthando is believed by her teacher to be profoundly deaf (category one):

*She is described as being profoundly deaf and from my observations I would agree with that*

and to have a visual impairment which is difficult to measure (category three):

*It is difficult to know what her acuity is, what her field of vision is*

although her teacher said she could single out small items of interest from the opposite side of the room.

#### **7.3.5.1 Aspects of style from interview**

The other factors mentioned relating to learning style were relationships with people, memory, use of adults' hands and motivation.

Noluthando's learning was seen as self absorbed, related only to things she was interested in. For her to learn, things needed to be:

*fun and enjoyable for her... colourful for her.*

Two other aspects commented on were her use of adults' hands to begin a task and her good memory which enabled her to learn a routine quickly.

#### **7.3.5.2 Ability and assessment**

Noluthando's teacher had not used formal assessments with her. She described how her first impressions may have misled her about Noluthando's ability:

*I thought she was going to progress much more quickly than she does,... I still think she is very able.*

#### **7.3.5.3 Prompt modality preference; interview**

Noluthando's teacher described hand over hand teaching as having been useful in developing drawing skills, and commented that she might need more interesting, in particular colourful, stimuli to look at.

#### **7.3.5.4 Prompt modality preference; taught task**

Noluthando's task was to open a tin of food she liked with a standard tin opener. Three days of records were completed for Noluthando, only the first as outlined in the record sheet. On the second day, the attention prompts were recorded, but the rest of the records were narratives of what Noluthando did on those days.

The first day's responses are summarised here:

Visual prompts; Noluthando showed 2 positive responses to visual prompts, and 1 negative response. (One response was recorded as '*spontaneous*', presumably meaning she did this without the prompt.)

Auditory prompts; Noluthando showed no positive responses to auditory prompts, and 4 negative responses.

Tactual prompts; Noluthando showed 3 positive responses and no negative responses. As above, 1 response was recorded as '*spontaneous*'.

The description of Noluthando's learning (she was independently successful in the task by day three) was that following the first day, Noluthando led the task, using the teacher's hands to complete the physically difficult parts of the task. She apparently used her vision to check on her success, '*looked closely at opener and lid*' and also '*tested top by pressing on it*'.

#### **7.3.5.5 Comparison of taught task and other data**

Noluthando's teacher had described success through hand over hand teaching. Perhaps Noluthando's preferred learning style was using a different type of manual prompt, the manipulation of the teacher's hands, as described in the records for the second and third day. The teacher's perception of lack of use of hearing was supported by the recorded data. There was insufficient data to judge the comparative success of different types of prompt for Noluthando. She completed the task in three days, which may mean that she was not sufficiently challenged by the task we agreed to carry out. This was possibly due to an underestimate of her ability.

Noluthando did not complete a second task.

## **7.4 Results; development of methods**

### **7.4.1 Interview**

The phase two studies developed some of the methods used in the pilot and exploratory studies in phase one. The interview continued to provide useful background information and more specific information about the child.

However, although sometimes the teachers commented on aspects of learning, they were not asked about teaching or learning style, and so could not comment directly on these. It was therefore not possible to compare teachers' perceptions of children with their understanding of learning style. For this reason two questions were added to the interview for phase three, relating to teaching style and learning style.

### **7.4.2 Taught task**

The taught task continued to provide valuable useful information about prompt modality preference, although two of the teachers found it difficult to complete.

The use of a category for 'no response' increased the amount of information given. At least seven records were missing for each child in the exploratory studies, in one case, 17 were absent. Apart from Noluthando, where no such recording was made, one pupil in this phase had five absent records (the initial observation for five days) and the others had two each. In the exploratory studies a record of no response was made only three or four times for each pupil, whereas in the second phase studies this rose to 15 and 36 times for two pupils.

Four video records were taken at this stage, and the overall inter-observer reliability was 84%. One record (Alice's first record) reached only a 58% agreement in scoring. The second video record for Alice reached 90% agreement. In Alice's first record all three of the non-matches were of visual prompts, and the one non-matching prompt in the second record was also of a visual prompt. This may relate to the nature of cerebral visual impairment (see also 9.2.2.2).

The reliabilities overall were robust, and they include three children and three teachers on four separate days, showing a strong agreement across situations.

### 7.4.3 The second task

By using the preferred modality prompts, two of the three children were successful in a second task. There was insufficient time for the third child to learn the task.

The pupils were regularly involved in these activities, and could have achieved these tasks at any time. Any task on which the teacher particularly focuses may have an increased chance of being achieved. However, since the children had not learnt to do these tasks *without* the prompts, it is likely that the use of appropriate prompts was at least a factor in their success.

## 7.5 Discussion

### 7.5.1 Common patterns in prompt modality preference and deafblindness

The phase two studies support the conclusion that learning styles, rather than deafblindness, are responsible for prompt modality preference. There is evidence for three children, although that for Satya and Noluthando is less conclusive. Table 22 shows the different preferences of the children in this phase and compares these to the differences in the phase one studies. Alice responded well to all three modality prompts, Helen responded poorly to all three, though best to tactual prompts, and Debbie responded well to tactual prompts and poorly to auditory ones.

**TABLE 22 RESPONSES TO PROMPTING**

Child	Most positive response to prompts	Least positive response to prompts
Alice	auditory	visual
Helen	tactual/kinaesthetic	auditory
Debbie	tactual/kinaesthetic	auditory



Compared to the children in the phase one studies, individual preferences emerge. Prompt modality preference does not relate to deafblindness but to individual learning style.

**CHILDREN IN PHASE ONE**

Child	Most positive response to prompts	Least positive response to prompts
Usha	auditory	tactual/kinaesthetic
Grace	auditory/visual	tactual/kinaesthetic
Caroline	tactual/kinaesthetic	auditory

**7.5.2 Learning style and teaching style**

The second task showed using the preferred prompt styles did improve the learning performance of two children. It also proved possible for teachers to alter their teaching style when they are given advice on what prompts to use. They could include these prompts successfully in the children’s daily routines, and children successfully completed tasks they had not learnt without this intervention. Learning style can be assessed in a deafblind child, and the results of this assessment can be valuable in improving teaching and learning for the deafblind child.

The artificial assessment task imposed a common teaching style on all the teachers, including familiar adults, individual teaching, and table top tasks carried out sitting down. Other preferences were not established and would have been used at the teacher’s discretion, for example, morning or afternoon working, using praise for success, and the context of the task. Teachers also identified other aspects of style for individuals, such as moving about while learning (Debbie and Satya) and motivating activities (Alice and Debbie). Debbie’s teacher explained how her vision may have been activated by movement:

*almost needs to be active and moving for her to really use her vision (Debbie interview).*

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Alice's teacher said that she had found:

*If she is playing with something... I've got to try and get in with that, rather than trying to impose something on her (Alice interview).*

The task structure used may have been unable to identify other relevant preferences, such as the use of multiple sensory prompts as described by Helen's teacher:

*I think she needs the vision, the sound, tactile, and anything else that is going...  
I do think she needs the full Monty, she needs a total, total approach (Helen interview).*

Other children may have preferred not to use prompts at all, or to use prompts which were not available, such as routine. Other aspects of learning style which may have been significant for individuals were described by teachers in the interviews. These were not included in the studies. The pilot study had explored a wider range of aspects of style, but the methods for collecting evidence had been inadequate. The inquiry then focused more precisely on prompt modality preference to develop better methods of gathering evidence. Phase three of the inquiry would include assessing other aspects of style, using sources of evidence including observations and examination of documents, which would expand time and the number of people involved for each child, and would not be bound by the artificiality of the taught task.

### **7.5.3 Assessment and ability of children**

None of the teachers had carried out any formal developmental assessment of any of the children, although two mentioned assessments carried out by other teachers. Respondents to the survey described using formal assessment to plan teaching, but the practice of the teachers in the phase two studies did not support this. Some disparity was apparent in the phase two studies between children's actual and perceived abilities. For example, although Noluthando functioned as having very severe learning difficulties, her teacher believed that she was very able, and Alice's teacher also believed that she might be capable of more than she appeared to be. On the other hand,

Helen's teacher and Satya's teacher considered that the pupils they worked with were perhaps less able than they appeared to be. Helen's teacher thought her low ability was masked by a cheerful attitude. Debbie's teacher admitted to confusion and did not know which of her activities were the best indicator of her level of understanding.

Some of the difficulty teachers had with understanding children's ability may have been related to the difficulty teachers had in giving evidence about the abilities of their pupils. Teachers described what they thought pupils understood but this did not always relate to what they could do. Teachers who know children very well may overinterpret the ability of children to respond to events, when those children are only able to give very small demonstrations of such ability (as described also in 6.7.1.). My experience indicates that this may be a common problem. Teachers believe a child knows something, but cannot say how, and the child cannot demonstrate this understanding, and in fact may not understand. A response to the familiarity of the situation may mislead and be considered a response of understanding.

### **7.6 Conclusions and summary**

In the studies reported in this chapter I developed methods for applying preferred learning styles to a new activity to discover whether this enhanced learning. The information gained from the assessment of learning style was used to make alterations in teaching related to the child's preferred style (compare Riding & Watts 1997). The second task was effective in using the preferred prompt modality in a more typical classroom experience. For the two children who had sufficient time to do so, both achieved a task which they had previously experienced but not been taught.

The second phase studies added further examples to the evidence previously gathered about learning style in deafblind children to reinforce the conclusion that the concept of learning style is relevant to deafblind children, at least in relation to prompt modality, and that it could be assessed. The learning styles shown were individual, and defined neither by the children's impairments, nor

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by the common impairment of deafblindness. They were not always in accord with the teacher's expectations.

In relation to formal assessment, it appeared that teachers were not using formal assessments to plan teaching or to assess ability, about which they were in fact in some doubt.

In the phase two studies, only one aspect of learning style was explored in any detail, that of prompt modality preference. Through the interview and other comments it became apparent that other aspects of learning style might be significant for these children, and these also might improve teaching and learning for these pupils. In the pilot study I had attempted to identify some other aspects of style but the method used then had been cumbersome and not very successful. The development of new methods of inquiry could allow for gathering evidence about other aspects of style which were particularly relevant to deafblind children. The extension of the individual case studies by additional sources of evidence would be used to build up a more complete picture of children's learning style, using the perspectives of additional people, and over a longer timespan. In the phase three studies I will use the understanding from the pilot study and from literature to define aspects of style relevant and possible for this inquiry and develop appropriate methods of assessment. The relevance of these aspects of style could then be tested by the use of the second task. These studies are reported in chapter eight.

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### **Phase three studies**

“Moen is one who is deaf, dumb and blind. How can he tell us anything?”...“There are other forms of communication. The boy can touch, he can smell, he can feel vibration.

If the fates deny us some of our senses, then we can develop others”

Peter Tremayne (1997) *The Spider's Web* p 170-1

#### **8.1 Introduction**

The studies in phase one and phase two provided evidence that learning style as related to prompt modality preference was both observable and could be assessed in deafblind children. An effective method of observing this had been developed by using an artificial situation in which this aspect of style could be distanced from the teachers' previous perceptions. The information provided by this assessment had been used to improve teaching and learning for two pupils, enabling them to succeed in a task they had not previously learnt. However, the evidence from the exploratory studies and the second phase studies related only to prompt modality preference, and the assessment had taken place only through an artificial teaching situation. The literature reviewed in chapter four had described a wide range of learning styles which might be relevant to deafblind children, and I had attempted to explore some of these, not entirely successfully, in the pilot study.

This chapter describes the phase three studies, in which I examined other relevant aspects of learning styles, developed methods for assessing these and applied the information gained to inform teaching and learning. The inclusion of more children in the inquiry added evidence to support the questions:

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- Is the concept of learning style relevant to deafblind learners?
- Is it possible to assess learning style in this population?

both in relation to the prompt modality preference already examined and to other relevant styles. The aspects of style chosen for this examination are discussed here. New methods developed for assessing style outside the artificial situation of the taught task were a classroom observation and the examination of children's records. These allowed for collection of data from an extended range of people and over an extended time period. The assessment of a wider range of aspects of learning style was applied, through the use of a second task, to provide further evidence for the question:

- Can such an assessment be used to improve teaching and learning?

In particular, the studies described in this chapter aimed:

- to explore methods for examining learning style outside the artificially structured situation
- to determine whether concepts of learning style other than that of prompt modality preference were relevant to deafblind children
- to ascertain whether these aspects of learning style could be observed and established in individuals
- to discover whether these aspects of style could be used to improve teaching and learning for deafblind pupils.

### **8.1.1 Participants**

Five children, Fallon, Siobhan, Kate, Ruth and Shula and their teachers were involved in the phase three studies. The children all had a significant impairment of both vision and hearing (were deafblind) and could pass objects from hand to hand. None had reached the stage of formal language (Rowland & Stremel Campbell, 1987) but two used isolated signs or picture symbols in various contexts with greater ability than children in phases one and two. Summary information about the children's vision, hearing and education is presented in table 23.

**TABLE 23 SUMMARY INFORMATION ON CHILDREN IN PHASE THREE**

	Visual impairment category	Hearing impairment category	Age	Key stage
Kate	one (no useful vision)	two (limited useful hearing)	6	1
Siobhan	one (no useful vision)	one (no useful hearing)	16	post 16
Fallon	four (significant useful vision)	three (useful hearing)	8	2
Shula	four (significant useful vision)	four (significant useful hearing)	16	4
Ruth	four (significant useful vision)	one (no useful hearing)	7	1

Further details about individual children are presented with the results for each child.

Siobhan in particular was included because she was considered to have neither useful vision nor useful hearing. Only a small proportion of the total number of deafblind children are able to make no use of either vision or hearing, (approximately 9% of the sample used by Porter et al. for their study in 1997). Siobhan was chosen to ascertain whether any of the findings would apply to her.

## **8.2 Development of methods for phase three studies**

Teachers' comments and literature had shown other aspects of learning style beyond prompt modality preference as in the phase one and two studies might be relevant to deafblind children. The new methods developed for the phase three studies allowed for seeing the child with other staff, including the perspectives of more people, and evidence to be gathered from over a longer period of time.

### **8.2.1 Wider range of aspects of style**

Through reviewing literature in chapter three I had developed my understanding of what features in learning style might be of interest in the study of deafblind children. This informed the selection of learning styles and

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the interpretation of style dimensions for these learners. Eight aspects of learning style were identified to be the focus of the phase three studies.

These aspects were chosen because:

- they are significantly related to or based on learning styles described in literature
- they concern factors which are commonly described, or are of significance, in teaching or learning for deafblind learners
- they can be matched to observable learning behaviours in children who had significant dual sensory impairments, no formal language, and who functioned as if they had learning difficulties. My linking of these observable behaviours to styles described in literature is not intended to imply that these behaviours are necessarily identical, or related perhaps as precursors, to these styles.
- it was expected that they could be observed in natural situations
- they are related to factors in the teaching and learning environment which could be altered, presumably to the benefit of the learner.

These aspects of learning style are listed in 8.2.1.1. below. For some of these, related characteristics had been described for infants and young children but this was not the case for all the styles used. Some of the styles are bipolar, where a child could hold a position on a continuum, such as being interested in objects only, people only, or both people and objects, but others are multi-dimensional, for example, the use of modalities. Riding and Rayner (1998) propose that properly assessed, cognitive style is independent of intelligent or developing behaviour, which would be equal at the two poles of and throughout the scale, but Feuerstein (et al. 1979) believes that some aspects of learning behaviour are more effective, for example, reflective styles. For some dimensions of the style descriptors I have chosen such as novelty/familiarity, the two poles may be equally useful (as in type 3 styles, see Kogan 1976 and 4.3.2 above), but for others one dimension demonstrates better performance (type 2 styles, Kogan 1976 and 4.3.2 above), such as



confidence, where the more persevering child will probably do better. For other aspects of style, there is no better dimension. For example, I did not assume that visual prompts were necessarily more efficient than auditory ones, although a child who can respond to visual prompts may receive more environmental information than a child who cannot. I did not exclude the possibility that some of these aspects may be related to development (see Cashdan 1971), for example, the ability to respond within or out of context. Other aspects may be related to personality, impairment or other enduring and stable characteristics and I did not intend to evaluate such links.

Although these aspects of style were considered individually they overlap. For example, there is a similarity between the interpretation of the context/out of context style and the novelty/familiarity style, and there are shared factors between the person/object style and internal/external motivation. However, I considered that there were aspects of each which were different from the others and so examined them separately.

The eight aspects of style selected are described here, and related to the styles supported by research in literature on learning styles. I have called these aspects of behaviour *learning style* to reflect their significance for the learning of deafblind children, and the individual differences which they describe. I believe that they are likely to be related at least to the 'outside skin' of Curry's onion (1983) as described in 4.5., that is, that they demonstrate instructional preference, and that they may indicate deeper personal, physical and cognitive structures, although I have no direct evidence for this.

### **8.2.1.1 Aspects of style**

I have called the eight aspects of styles I considered:

1. Prompt modality preference
2. Novelty/familiarity
3. Person/object orientation
4. Internal/external motivation

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5. Context/out of context
6. Confidence/lack of perseverance
7. Tempo of learning
8. Small steps/whole task

Each aspect of style is described in the following, referring to literature regarding style and to an individual example.

### **8.2.1.2 Prompt modality preference**

In the literature on cognitive styles, authors approach the question of modality from different perspectives. Riding and Rayner (1998) discuss the verbaliser/imager dimension, Hill gives five categories of sensory learning; visual, auditory, tactile, olfactory and 'savory' (Cognitive Style Mapping cited in Jonassen & Grabowski 1993) and Dunn and Dunn's Learning Style Inventory describes visual, auditory, tactile and kinaesthetic modes (cited in Jonassen & Grabowski 1993). Ozer and Richardson also examined the preference for sensory modality in learning (1974).

Modality was already the focus for the exploratory studies in phase one and for the phase two studies.

I have used the modalities usually directly used for teaching; sight, hearing and touch/movement. For deafblind children it is difficult to decide whether a hand over hand prompt is tactual or kinaesthetic so I have not distinguished between these two. Therefore three dimensions of prompt modality preference are described, visual, auditory and tactual/kinaesthetic, and preferences are not mutually exclusive. The fact that a child finds auditory prompts useful does not mean that simultaneous visual prompts will not also be useful. During observation, an event was recorded as a prompt if it was a deliberate attempt to attract attention or to assist with task completion. In most cases prompts were not strictly unimodal. A person speaking to a child (giving an auditory prompt) would usually be within the child's line of sight. While touching a child's arm (a tactual prompt), the person would frequently speak as well. Sometimes these additional cues were probably redundant

because of the degree of sensory impairment. Where the primary aim of attracting attention focused on one method, for example waving, or raising a voice, this would be the recorded prompt. Simultaneous prompts were also recorded.

An example of this aspect of learning style is a child at table learning to pour a drink. Either the sight of the cup, the sound of the liquid being poured or having a gesture made with the child's own hands might be the most significant support for learning.

### **8.2.1.3 Novelty/familiarity**

The adapting/innovating style is documented by Kirton (1976, 1994 cited in Rayner & Riding 1997) and a similar style is described by Sternberg (1997) as liberal or conservative. It relates to 'doing something differently' (Kirton) or 'maximising change' (Sternberg) as opposed to 'doing something better' or 'sticking to known rules'. Russian psychologists assessing deafblind children investigated this style (Hodges 1994 – see 2.7.3.1.) It is a bipolar style. The option to make something new or adapt current skills in problem situations was interpreted for this group as: whether novel or familiar people and settings were the most interesting and engaging for the learner and led to learning success. In observation, this was recorded by including any new event which happened, especially where this could be compared to a similar, familiar event. In records and interviews, comments about the child's response to new and to familiar situations were recorded. To some extent all the taught tasks presented a novel situation, with novel equipment, but they could not be contrasted with familiar situations presented in this way. An example is the child who is more likely to pick up the cup if a new, interesting aroma came from the drink, than if it was the familiar one of the drink poured every day.

### **8.2.1.4 Person/object orientation.**

Dunn and Dunn (cited in Jonassen & Grabowski 1993) describe preference for learning in groups or alone, and as discussed above, the field dependence/independence dimension is assumed to have a strong social

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aspect, with field dependent people being more socially focussed and oriented to people, and field independent people being more object oriented (Saracho 1997, Entwistle 1981, see above 4.6). Response to people in learning situations was assessed by psychologists in Russia (Hodges 1994). Although this style is therefore less discrete in literature, it has a very particular significance for the population of deafblind children. In discussion with other professionals I was aware that children were often described as either interactive or withdrawn. An anecdote illustrates this. Mabel, an eight year old deafblind child, is very attentive to people, and prefers to look at people than objects. She seeks contact continually. A recent audiology review demonstrated that Mabel detected voice sounds (people) when they were ten decibels quieter than the volume at which she detected electronically generated sounds. This, in the current context emphasising interaction for deafblind children, has made her appear more able than she actually is. Her fixation on people is frequently a barrier to learning, and her communication skills have progressed only very little.

Some children in the studies are described as being withdrawn from people, but attentive to objects and to how things work. Although this style is apparently bipolar, children could be equally interested in both objects and people. Significant preference for objects over people may be considered to be an indicator of autistic spectrum disorders, although I do not believe this is so for deafblind children. Events from the observation recorded would be those where a child approached a person for contact or used a person as a key to learning, and those where a child rejected an adult, or sought an object, and the response to separate presentations of people and objects. Comments from records and interviews relating to the child's interest and attention to objects and people were recorded.

An example showing these aspects of style is the child learning to lift her cup who is seeking eye contact with the person assisting her, and reaching for the hand of the person assisting, contrasted with the child who pushes away help and reaches for objects of any sort on the table.

### **8.2.1.5 Internal/external motivation**

Learning is seen as primarily a self directed activity, or one directed from outside. Various authors describe characteristics such as intrinsic motivation, (learning for personal understanding) and extrinsic motivation (learning for academic qualifications) (Entwistle 1988) or the need to please adults and no need to please adults (Dunn et al. 1979 cited in Jonassen & Grabowski 1993). The use of adult praise is part of assessment of deafblind children in Russia (Bertyn' & Pevzner 1986 cited in Lambert 1987). Once again, this is primarily a bipolar dimension, although a mixture of motivations might be most valuable in deafblind children, whose internal motivation may be lacking because of difficulty in interacting with the environment.

The distinction here is between children who need an external motivation to complete a task (praise from an adult or an edible or audible reward, for example), and those who appear to gain pleasure from their own ability to complete a task. I recorded events and comments relating to whether the child apparently found her own work rewarding, or whether she required some external reward. In many cases tasks had intrinsic rewards – for example, the benefit of a drink gained from lifting the cup. This was recorded as an internal motivation. The child with the cup might, for example, look to an adult for praise as soon as she has lifted the cup and even before she drinks from it, or may pick it up, drink and sigh contentedly, having achieved her objective.

### **8.2.1.6 Context/out of context**

This style is related to the field dependence/independence continuum, initially described by Witkin (see Witkin 1964) and well recognised in literature. Feuerstein et al. (1979) describe something similar which they call part-whole relationships. Saracho sought precursors of the style in babies and young children through social attachment (1995), and Kogan sought precursors in body articulation (1976). It has been strongly related to social attributes (see 8.2.1.4 above). The concept relates to the ability to distinguish relevant stimuli from the background, to dis-embed information. It has been expanded into the idea of 'articulation', the ability to differentiate self from context. It is

considered a bipolar dimension, but there is not necessarily a better pole. For the purpose of this inquiry, I describe the child's learning in relation to the context in which a behaviour was used. In interviews and documents, comments relating to the significance of routines or contexts for learning were recorded. If a child learnt a particular behaviour, such as lifting an arm to pick a cup up to her mouth, could this be seen in different contexts, or was it only initiated when the context was the same – for example, in the classroom, but not in the café?

### **8.2.1.7 Confidence/lack of perseverance**

Dunn and Dunn's Learning Styles Inventory (1979 cited in Jonassen & Grabowski 1993) includes persistence, inclination to complete tasks, and the opposite, non-persistence. Feuerstein et al. (1980) discuss the ability to see a task through and the confidence to believe it can be completed. This aspect of style is less well documented, but was chosen because it may have a particular significance for the children with deafblindness described as passive learners, who are sometimes unable to see tasks through without prompting (McInnes 1999, Nielsen 1986, Orr 1992). My interpretation discriminates between learners who had apparent confidence and the ability to see things through and saw themselves as agents of change, and those who simply complied with outside demands. I assumed the confident and persevering child to be a better learner. Events observed where the child completed a task independently, or tried to, and from records and interviews, comments indicating that a child tried to finish a task were recorded. A child with confidence in herself would lift a cup to her mouth and keep her hand on it to return to the task, but one without would take her hand away and require a further prompt to lift her hand again.

### **8.2.1.8 Tempo of learning**

This style relates most significantly to the well documented style called reflectivity/impulsivity as described initially by Kagan (1965 cited in Jonassen

& Grabowski 1993) and a similar dimension is called conceptual tempo by Meichenbaum and Goodman (1969), which they describe as:

a consistent tendency to display fast or slow decision times in problem situations  
(p 785-6.)

An impulsive person makes quick decisions, but these decisions are more likely to be wrong than those of the reflective person who checks her thinking, possibly using verbal regulation of action (Harris O' Brien 1987). Similar concepts are discussed by Feuerstein et al. (1980) and it has been of particular interest in relation to deaf children (for example Harris O' Brien 1987). This is also a bipolar dimension, and although reflection is often seen as the preferred aspect of the style, in terms of deafblind children, the ability to make many attempts might be valuable.

I was interested in whether the children made frequent attempts at something without further prompt, and whether they made rapid movements or slower ones. From the observation, the number of attempts made at a task was recorded, and comments related to pace of learning activities from documents and interviews were relevant. This might be seen, for example, in whether a child tried repeatedly to connect with the handle of a cup to pick it up, or whether she made one slow, searching grasp for it, and if it was not found, appeared to assume it was not there.

#### **8.2.1.9 Small steps/whole task**

This relates to the wholist/analytic style described by Riding and Rayner, (1998) and to the style discussed by Sternberg (1997) as 'global' and 'local'. Pask (1988) used the terms 'serial/holist'<sup>1</sup>. Ozer and Richardson (1974) used different breakdowns of tasks into parts to facilitate learning. It relates to the preference for processing information as wholes or as parts, the interest primarily in a whole event or in the details of it. For Riding, this would include the field dependence/independence style and the impulsivity/reflectivity style.

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<sup>1</sup> Pask uses the spelling 'holist' and it is therefore used here, although in most cases the preferred spelling is 'wholist'.

My interpretation for deafblind children relates to whether they represented and dealt with a task as a whole, single entity and worked to complete that task, or whether they appeared only aware of single aspects of the task and worked to complete those only. During the observation, examples were recorded of response to learning when a whole task was presented and when only part was. In documents and interviews the child's response to small steps or completion of larger sequences was recorded. This dimension was primarily seen as bipolar. An example would be where a child at a table was learning to pour a drink, and first lifted the jug with assistance and tipped it over the cup. When the jug was replaced, the child might need further prompting to pick up the cup and drink from it. However, she might be aware that this was the second part of the task, and reach for the cup to drink from it as soon as the pouring was finished, or even before.

### **8.2.2 Other developments in methods**

The phase three studies were intended to create a fuller picture of learning style in deafblind individuals, using other relevant aspects of style. Methods were developed which included a wider range of sources, accessed the opinions of more people, and extended the time period of the data collected (for results, see table 25 in 8.3). The child was also seen outside the artificial setting. A direct classroom observation and examination of pupil records were added to the interview and the taught task assessment used in the exploratory studies in phase one and the phase two studies. In some ways these additional approaches reflected ethnographic methods; they used multiple sources of data, they were undertaken in natural, not artificial situations, only a small number of cases were involved and the methods were evolving as the information was collected (Hammersley 1985, Hitchcock & Hughes 1995). They focused more on how the child usually behaved and how she was perceived by those about her. The methods were more reflective and less interventionist, using natural situations rather than creating situations to elicit information. But it was not intended to be a description of culture from the perspective of the children involved as Denscombe (1998) describes



ethnography. These methods were used to illustrate the instrumental case studies (Stake 1995), informing the issue of *learning style*. They built up case data (Rudduck 1985), and the combination of sources allowed for a detailed exploration of individuals (Denscombe 1998). My increased understanding of learning style allowed me to interpret this information and categorise behaviours to learning styles. The information from these sources was drawn together to create learning style profiles for each individual, described using the eight categories named in 8.2.1.1.

The phase three studies also allowed some evaluation of the stability and development of styles across situations, people and time. If the recorded data did reflect style, some consistency would be expected across settings, although development might be seen across time. As Eisner argues:

In seeking structural corroboration we look for recurrent behaviours or actions, those theme like features of a situation that inspire confidence that the events interpreted and appraised are not aberrant or exceptional, but rather characteristic of the situation (1998 p 110).

The classroom observation and the examination of documents required a greater immersion in the child's individual situation, and created a deeper understanding of the child in her environment.

### **8.2.2.1 Classroom observation**

In the phase three studies, there was a two and a half hour naturalistic observation of the child in her classroom. Nothing was deliberately altered for this observation, which was intended to add to both the quantity and detail of available information. I am an experienced observer of deafblind children for the purposes of assessment and providing educational advice. During the observation, I acted chiefly as an 'observer participant' (Hammersley & Atkinson 1983, cited in Wellington 2000). The semi-active participant may in fact be more unobtrusive in a classroom than the complete observer. Within the class, I joined in class singing, greeted children who approached me, wiped tables if necessary, and also made notes. All the classrooms in which I observed had frequent visitors to observe staff and children, for assessment,

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teaching observation, staff training and other purposes, and in many cases I was a regular visitor already. I believed that a minor participatory role was likely to be less threatening and more natural than a totally detached observer. This minimised the 'observer effect' and resultant diminishing of reliability (Gall et al. 1996). I also asked each class teacher whether there was a behaviour they would like me to observe during the session, to inform their own assessment priorities. Two teachers asked me to do this.

The observation was of an event sampling type (Gall et al. 1996), but semi-structured rather than structured, and intended to gather qualitative rather than quantitative information. The use of event sampling, the recording of a specific type of event each time it occurred, allowed for the recording of frequent, less frequent, and even to some extent infrequent events (McKernan 1996). I simultaneously recorded events related to the eight aspects of learning style I had identified. For most categories only limited events were expected. Only small amounts of data were recorded under some headings, for example small steps/whole task, while for others, in particular prompt modality, far more information was recorded. A pilot observation was carried out which indicated that this method of data collection, though intensive, was possible.

Because observation for learning style in deafblind children was new and being developed by this inquiry, it perhaps most resembles a 'focused observation' (Gall et al. 1996) where features of interest are already identified, and deeper information is gathered about them. This precedes what Gall et al. (1996) call a 'selected observation' where understanding of specific elements of a situation is deepened and refined. My observation achieved this partly; but more substantially elucidated the concept of learning style and appropriate mechanisms for observing it, providing foundations for further research.

The categories used for the observation were concerned with observable behaviours (overt, as discussed by Denscombe 1998) and these were outlined on the observation recording sheet. The headings for the eight record sheets used for this categorisation are given in appendix twelve.

Although some behaviours may have been missed, the primary intention was to increase the amount of data available and to generate further ideas about possible learning styles in deafblind children, and this was achieved.

Part of one observation was videotaped, and two observers who were professionals working with deafblind children observed this to measure inter-observer reliability. The observers both recorded prompt events and the two records were matched, as described above in 5.3.2.1. The agreement between the two records was 80% as shown above in the table in appendix five.

The observation was designed to involve several adults and activities where possible, although practical classroom arrangements, in particular the perceived need of the deafblind child to work with one familiar adult, sometimes limited this. Each child did have contact with at least two people (see table 25 in 8.3.). The observation was intended to be of typical classroom behaviour, to provide information about learning styles across activities, people, time, and teaching style. Examples of records are found in 8.2.2.4 below. The records of the events were added to the profile.

### **8.2.2.2 Written records**

Annual review reports and sometimes statutory assessment information were used because although not public they are available to a wide range of individuals involved with a child and they were also the most likely accessible documents to include issues relating to style. They are systematic, although selective (Denscombe 1998), and recording about individual children was likely to use a similar framework in different years, allowing for some comparison between years. In more recent times, the records were more likely to be substantially a summary of the success of educational programmes over the last year, but earlier ones were more wide-ranging and some included more about perceptions of learning. Initial education reviews and statement advice, where this was available, also sometimes commented on aspects related to learning style.

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I have had some limited access to records from the school for deafblind children in Russia<sup>2</sup>. These records are called 'характеристики' which directly translated can mean 'characteristics' and possibly include more information about children's abilities in relation to learning style. For example, one record included 'her vision memory is weak' 'her attention is unstable' 'she has no emotional response to her own work'. Other comments included relationships with adults and children, approach to study skills, memory responses, primary interests. These records about children are written yearly and in narrative form by Russian teachers. The name itself implies more interest perhaps in learning process than does *annual review* in the UK.

I recorded comments from records relating to aspects of style in a similar way to the observation, using similar definitions of the relevant styles (Gall et al. 1996). In effect, these were thematically recorded by event. I examined all available records, as described above, relating to the children. These documents were not created to provide evidence for these studies, and are therefore not influenced by the aims of the inquiry. They included comments from people other than the teacher interviewed or working with the child, and over a longer period of time. The interpretation brought to them by examination is subject to the interests of the research (Robson 2002). Because they are indirect evidence the information and interpretation cannot be checked with those who wrote it, nor can its objective truth be checked (Gall et al. 1996). However, annual reviews and statement advice *are* subject to scrutiny by a variety of professionals and by children's parents, and are generally considered to be trustworthy. They also allowed teachers' structured evidence from a year's work to be compared and added to their immediate recall as presented in the interview. Examples relating to all the

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<sup>2</sup> I read these records in Russia, in Russian, in 1994. They were written longhand with occasional abbreviations I could not understand and words I could not read. I have only a few examples as there was no photocopier and I also had to write longhand all I wished to record. As such my records may be inaccurate. This method of recording may also be outdated in terms of current practice. I only know that they appeared to me then, and they appear to me now, to carry more information about learning *process* than records in the UK, as would be expected, considering the arguments made about the Eastern European approach to deafblindness as described in chapter two.

aspects of learning style were found across the range of children, but not all aspects were mentioned in all files. Examples are found in 8.2.2.4. below.

### **8.2.2.3 Interview**

As previously, the phase three studies included an interview with classroom staff, but two additional questions were asked, which related directly to learning and teaching styles:

What about (*name's*) learning style?

What would you say about your teaching style?

However, the terms *learning style* and *teaching style* were not defined. The questions thus gave some insight into how teachers interpreted learning style in relation to the pupils they worked with, as well as providing some information about learning style. Teachers were prompted and encouraged to answer these questions by such comments as:

*What would you say about her environment is most important to her (Siobhan interview)*

*What about the way you approach tasks and children, how do you try to arrange the way that you teach (Kate interview.)*

As in phases one and two, the interview was recorded and transcribed. Information relevant to the aspects of style from all parts of the interview was used in compiling the individual profiles of learning style. Information from the interview about one teacher who had previously taken part was used, with her agreement, for this study.

### **8.2.2.4 Examples of records.**

Examples of events recorded from the documents, observation and interview are given below, under the headings for each of the aspects of learning style. In some cases these are deliberately contrasting, to illustrate different ends of a bipolar style. The examples are quotations from either the interview transcript, my observation notes (with some punctuation added for clarity) or from documents. Examples for all aspects of style were found in each of the

three sources, but not all aspects were found for every child in each source (see table 24 in 8.3).

**8.2.2.4.1 Use of prompt modality and sensory information**

*Shula is able to learn effectively by imitation and modelling (Shula Statement 1997)*

*She'll watch you doing that...and then she'll have a go (Fallon interview)*

*(Teacher said) 'Come here'; no response (Shula observation)*

*(Teacher) touched hand. Ignored. (Ruth observation)*

*Kate has ... started to tolerate objects being placed in her hands and ... has started to explore them (Kate Review 2002)*

**8.2.2.4.2 The response to novel or familiar stimuli**

*Wolf toy – new toy – took and rejected, pushed away with feet (Siobhan observation)*

*She very much likes novel experiences or toys (Fallon interview)*

*Even though she was working with (very familiar adult) and has been participating well in this type of activity, Siobhan was unable to adjust to the different setting (Review 1999)*

**8.2.2.4.3 Preference for people or objects**

*Enjoys being with other children, seeks out adults (Shula Statement 1997)*

*She is rarely motivated by interaction and continues to be primarily object orientated (Fallon Review 2000)*

*To find copying a human more interesting than watching a ball run (Ruth interview)*

**8.2.2.4.4 Internal or external motivation**

*Wanted and asked for sticker for response to task (Shula observation)*

*She has been fully absorbed in creating objects and pictures according to her own criteria (Ruth Review 2001)*

*It's got to be quite relevant to her (Fallon interview)*

**8.2.2.4.5 In context/out of context: response to different situations**

*Completed morning routine despite being asked to clean glasses in the middle (Shula observation)*

*Switch touching – reaching for switch, in context, familiar and did activate...*

*switch touching, unfamiliar, didn't activate or handle switch for soundbeam (Siobhan observation)*

*She seems not interested in food at the 'wrong times' i.e. not lunch and break times. (Siobhan Review 1997)*

**8.2.2.4.6 Confidence/lack of perseverance in own actions**

*Tried to bang switch more than once to activate if no action first time (Kate observation)*

*Has continued to need continuous prompting and attention (Shula Review 2001)*

*Originally it was let's just keep bashing this... now she does it and waits (Kate interview)*

**8.2.2.4.7 Tempo of learning:**

*Long gaps between switch presses (Siobhan observation)*

*Activating projector switch she maintained a pattern of between 5 secs for several minutes (Kate observation)*

*A very slow style, time for some input, some laughs so she can feel relaxed (Shula interview)*

**8.2.2.4.8 Learning through whole tasks or small steps**

*Picked up bottle and cup and took to sink, no further prompts (Ruth observation)*

*Getting into chair – moved onto base of chair, then didn't move any further (Siobhan observation)*

**8.2.3 Analysis of information**

The information from all three sources, interview, observation and records, was recorded under the eight different headings of learning style. A single

event or comment could be used to illustrate more than one aspect of style. For example the following quotation was used as a description both of Ruth's motivation and of her orientation towards people and objects:

*to actually want to copy you, to find copying a human more interesting than watching a ball run (Ruth interview).*

The evidence from all these sources was then recorded in a single format. From this, individual profiles of style were drawn. One (edited) example of such a record and profile is in appendix 14. The evidence was not judged by how often different statements or events occurred, because one event or opinion could be voiced by more than one person (possibly even using the same ideas, when writing a report for a review, for example) but interpreted through the strength and similarity of data, and whether aspects appeared to develop or change over time or with different people. For example, an aspect of style might be seen only once in an observation, and not recorded in other information, or a written record by one person might contradict what others said, but be supported by the observation. Contrasts in observation and in staff perceptions were particularly important for exploring aspects of style which might be seen in different ways by teachers. The use of different sources allowed for the development of these strands. Different points of view and different assumptions were deliberately allowed to become evident in the data as it developed.

### **8.2.4 Using multiple sources**

The use of multiple sources allowed different people, with different intentions, and at different times, to contribute to a single picture, allowing for comparison and integration of these different perspectives, perceptions and preconceptions. This was intended to build a more complete and natural picture of the child's attitude, approach and aptitude to learning. Schmeck (1988b) declares:

Observation of a single action cannot reveal a style. One's impression of a person's style is abstracted from multiple experiences of the person under similar circumstances (p ix.)



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The use of multiple sources enabled some evidence in almost every category of learning style to be collected, which was not possible from most of the single sources individually. Each source and item of evidence advanced the interpretation of the picture, although one source might either challenge or support evidence from another source. For example, the taught task assessment might show a different preference to the written records about that child. As with a work of art:

different critics might be attending to different dimensions of the same work. They might be bringing different perspectives to the work (Eisner 1998 p 113).

The evidence from the sources brought a new depth to the understanding of the whole child and the teachers. This use of multiple sources to increase understanding as a resource for teaching is in itself perhaps worth further investigation.

### **8.2.4.1 Taught task**

Four pupils were assessed through the taught task to provide information about prompt modality preference. For Siobhan, who had no useful hearing or vision, there were some adaptations to this task, as described in 8.4.2.1. The observation and a discussion with the teacher informed the design of this learning based assessment. The information from these tasks was added to the other information regarding learning style.

#### **8.2.4.1.1 *Siobhan's task***

Siobhan's task was to unscrew the lid of a plastic 'jar'. The jar was enhanced with highly reflective paper and the lid had a texture distinctively different from that of the body of the jar. A vibrating massager was placed inside the jar, with Siobhan's help. The lid had to be held and unscrewed (it was placed on with a minimum of turns) to retrieve the massager.

**Figure ten; Siobhan's task**



**8.2.4.1.2 Video recording**

Two videos were taken of children involved in the taught task in the phase three studies, Fallon and Siobhan, and these were used as a measure of inter-rater reliability, as described above in 5.3.2.1. The overall agreement was 93%. The agreement tables are given in appendix five.

**8.2.4.2 Second task**

Two children undertook a second task. The individual profile of learning style built up from the interview, observation, document review and the assessment task was used to inform the teaching style for this task, as described below in 8.4.1.6. and 8.4.2.6.

**8.3 Results; collection of data**

The phase three studies were intended to identify aspects of learning style relevant to deafblind children and to find methods suitable for exploring and assessing these in natural situations. If identified and assessed, could these style preferences improve teaching and learning for individual children?

Information from an observation, and from the examination of documents was added to that from the interview used in phase one and two and the taught task assessment used in the exploratory studies in phase one and in phase two. This contributed to a greater understanding of the concept of learning

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style for these pupils and the ways in which children demonstrated learning style in the classroom.

All four sources yielded significant information. For four children, information was available on all aspects of style, although for one child there was no evidence from any source about one aspect of style. In most cases information was available from all three relevant sources (the taught task was only designed to provide information about prompt modality preference) for all aspects of style. In four instances evidence was only available from two sources only, and in two cases from one source only. The sources of evidence are presented in table 24.

**TABLE 24 SOURCES OF EVIDENCE USED FOR PROFILES**

	<b>Kate</b>	<b>Fallon</b>	<b>Ruth</b>	<b>Siobhan</b>	<b>Shula</b>
<b>Prompt modality preference</b>	Interview documents observation taught task	Interview documents observation taught task	Interview documents observation taught task	Interview documents observation taught task	Interview documents observation
<b>Novelty/familiarity</b>	Interview documents observation	Interview documents observation	Interview documents observation	Interview documents observation	Interview documents observation
<b>Person/object orientation</b>	Interview documents observation	Interview documents observation	Interview documents observation	Interview documents observation	Interview documents observation
<b>Internal/external motivation</b>	Interview documents observation	Interview documents observation	Interview documents observation	Observation interview	Interview, documents observation
<b>Context/out of context</b>	Interview documents observation	Interview documents observation	no evidence	Interview documents observation	Interview documents observation
<b>Confidence/lack of perseverance</b>	Interview documents observation	Interview documents observation	Documents observation	Interview documents observation	Interview documents observation
<b>Tempo of learning</b>	Interview documents observation	Observation	Interview documents observation	Interview documents observation	Interview documents observation
<b>Small steps/whole task</b>	Observation	Interview documents observation	Interview documents observation	Documents observation	Documents observation



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The most evidence for all the children was in the category of prompt modalities, and the response to novel or familiar stimuli and the preference for people or objects also produced many entries in evidence. There was less or much less evidence relating to tempo of learning and learning through whole tasks or small steps; for this latter, two or fewer sources of information were available for three of the children.

The documents and observation included the perspectives of people other than the teacher, but in some cases the same person provided evidence for more than one source. For example, the person involved in the interview might also be the most significant contributor to the written records and also the person working with the child most of the time during the observation. Different numbers of people were included in the evidence. For one child, (Siobhan) 15 people contributed to the evidence, and the fewest involved for any child was three (Ruth). My own perspective is not included in these figures as it is common to all. The amount of time covered by the written records was between two years (Shula) and thirteen years (Siobhan).

Table 25 shows the number of people involved in information for each child, and the number of years the information covered.

**TABLE 25 INFORMATION SOURCES FOR PROFILES**

	Kate	Siobhan	Fallon	Shula	Ruth
Number of people observed	2	2	5	3	2
Number of people interviewed	2	2	1	1	2
Total number of people represented (interview, written records, observation)	5	15	11	9	3
Number of years covered by written notes.	4	13	4	2	4

The methods used were successful in obtaining a wider range of sources of information in relation to learning style.

## **8.4 Results; children and learning style - compiling the profiles**

### **8.4.1 Aspects of style for Kate**

There was evidence for all aspects of style for Kate, from four sources, using five people's perspectives.

Kate had virtually no useful vision (category one) but some residual hearing (category two). Her teacher described:

*she can see bright lights in a dark setting*

but that:

*her hearing appears to be inconsistent, there are times when you do things, and you think she must have heard that, and she doesn't appear to have heard it, other times, she responds to really, when you just whisper to her.*

#### **8.4.1.1 Prompt modality preference**

The observation record shows many prompts for Kate, and comments were made in written records and in the interview regarding her visual, hearing and tactual/kinaesthetic abilities. The taught task was also used and is described in 8.4.1.2.

##### **8.4.1.1.1 Visual prompts**

No specific visual presentations were made during the observation, there was no attempt to show Kate something without first invoking another sense. In written records and the interview, it was reported that she was able to see bright lights in a dark setting, but it appeared that Kate was not using vision for learning.

#### **8.4.1.1.2 Auditory prompts**

There were many auditory prompts during the observation, including direct speech and sounds of instruments and toys. Kate frequently attended or made positive actions in response, although sometimes she did not respond at all and on some occasions she cried or otherwise responded in a way which was negative in terms of learning. In the interview and written records it was reported that:

*her hearing is inconsistent (interview)*

and:

*there are particular sounds that she can hear and that she enjoys listening to (Review 02).*

#### **8.4.1.1.3 Tactual/kinaesthetic prompts**

Many tactual/kinaesthetic prompts were observed, and Kate responded negatively to most of these, reported as 'withdrew' or 'resisted' or there was 'no response' although sometimes such responses were preceded by some co-operation. Sometimes she tolerated a touch, most notably to her lips when being fed, and when making sounds with her hand on a tambourine. The written records and the staff interviewed said that previously Kate was 'tactile defensive' and:

*she used to be very stiff, just stiff most of the time (interview)*

but that this was now improving:

*although Kate has always been very tactile defensive, she has started to tolerate objects being placed in her hands and on many occasions has started to explore them (Review 02).*

#### **8.4.1.2 Taught task**

Kate's task was to open a box containing a vibrating massager by swiping. The lid was enhanced with silver paper and overhung the edge of the box. There is a photograph in appendix 13, and the records are presented in table 26.



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In the recorded responses Kate showed:

4 positive responses and 10 negative ones to visual prompts (26% and 64%)

4 positive responses and 10 negative ones to auditory prompts (26% and 64%)

6 positive responses and 9 negative ones to tactual prompts (40% and 60%.)

### **8.4.1.3 Prompt modality preference**

Her responses to tactual prompts were therefore the most positive.

Her responses to both auditory and visual prompts were more negative.

She did show both positive and negative responses to all prompts. She showed no response at the highest (most supportive) level of prompting, that is, assistance prompts, in any modality.

**TABLE 26 KATE'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	5				5
Visual prompts		1 some attention 3 n/r	1 hand in box 2 stilled/waited 2 n/r	5 n/r	<b>+ve response</b> 4 <b>-ve/no response</b> 10
no record		1			1 1
Auditory prompts		2 some attention 2 n/r	2 hand to box 3 n/r	5 n/r	<b>+ve response</b> 4 <b>-ve/no response</b> 10
no record		1			1
Tactual prompts		4 held, rubbed 1 n/r	1 allowed help 1 felt independently 1 pushed away 2 n/r	5 n/r	<b>+ve response</b> 6 <b>-ve/no response</b> 9
no record					
Total positive and negative response					<b>+ve response</b> 14 <b>-ve/no response</b> 29 no record 7

n/r = no response

#### **8.4.1.4 Other aspects of style for Kate**

##### **8.4.1.4.1 Novelty/familiarity**

People who work with Kate report consistently that she learns better in familiar situations, and that unfamiliar situations retard her learning:

*The things that she likes now are the things that happen very regularly, she's become very familiar with them (interview)*

and, concerning some activities to which she did not respond well:

*I think it's because she is not familiar with them (interview.)*

One example of a similar situation, with a familiar and an unfamiliar stimulus was seen in the observation. A familiar person greeted her and she put her hand out, and an unfamiliar person greeted her and she stilled. Both responses show her considering the event, although in the first she also acted positively to continue interaction, which could be considered preferable for learning.

However, it may be that Kate did not recognise the unfamiliar situation. There was little evidence about her response to unfamiliar situations, because these were not offered to her. There is no clear indication from the evidence as to which Kate may find more useful.

##### **8.4.1.4.2 Person/object orientation**

There were examples both of Kate responding positively to people and her lack of interest in people. In the observation no positive responses to people were seen, but the staff interviewed said that she depended on people to give her access to learning. The data from her records shows possibly an increasing interest in people as she:

*is accepting Marjorie (who worked one to one with her) more and more*

It is possible that this one to one close contact with one individual was increasing Kate's access to learning, her initial resistance to people being overcome:

*Kate has become less willing to let adults interact with her as frequently as before (Review 01)*

*The relationship with her (Marjorie) it's fantastic, it's made such a difference to her (interview)*

However, it may be that staff now working with her have invested heavily in the significance of this relationship and it is important to them to believe it is valuable.

#### **8.4.1.4.3 Internal/external motivation**

All the sources agreed that Kate's motivation was almost always her own interest in activities and events, and that external motivators played almost no part in her learning. It appears though that Kate was not offered many external rewards, as may be appropriate for a child who is not interested in people and is largely unaware of other positive feedback. Active, self motivated learning is important at an early stage before she learns to conform and learn in a more formal way. But Kate may benefit from being offered external praise, and perhaps learning to respond to these rewards.

#### **8.4.1.4.4 Context/out of context**

Kate showed some understanding of tasks within a familiar context, and is reported to respond well to them. However, during the observation Kate responded negatively to a familiar context, when she definitely did not like the activity – she did not make any movement response to her hands in paint. There were no observed examples of Kate experiencing activities out of context, although the written records and interview indicated strongly that routine helped her to learn.

#### **8.4.1.4.5 Confidence/lack of perseverance**

There was some evidence from all three sources regarding this, showing that Kate had some understanding of the necessity to complete an action or task, or at least that she was learning to do so.

#### **8.4.1.4.6      *Tempo of learning***

Kate used many swift and continuing movements to achieve goals such as turning on a switch. People commented that she was learning to go slower (possibly to be more reflective) and see the results of her actions:

*she no longer hits the switch continually but has recently started to hit it and wait for the response (Review 02).*

#### **8.4.1.4.7      *Small steps/whole task***

Evidence from the observation and the interview showed that Kate was learning through small parts of the tasks which she was accomplishing:

*(we used) very small steps ... letting her go a bit longer (to teach her to float) (interview)*

During the observation it was noticeable that Kate, who is functionally blind, was generally not offered the experience of whole tasks, in that she was presented with aspects of a single activity (putting her hands in the paint, but not preparing the paint tray) and because she cannot see she may not have been aware of the whole task activity. Although her current learning appears to be based on completing sections of tasks independently of each other, it may be that if she had access to an understanding of complete tasks this might provide a better learning environment.

#### **8.4.1.5          *Summary of evidence for Kate***

##### **8.4.1.5.1      *Prompt modality preference***

Kate's teachers stated that she did not respond well to visual stimuli, considering her to be almost blind. The way in which they presented tasks and described her learning echoed this. However, the taught task showed that Kate could respond to visual information within the task, at least as well as to auditory cues. Her use of tactual cues was at a slightly higher level. The evidence shows that Kate responds to cues in all three modalities successfully.

##### **8.4.1.5.2      *Other aspects of style***

From the evidence, it appears that Kate may learn better from activities which are very motivating for her, and that she uses a fast tempo, needing many

attempts on each task. She is beginning to understand the necessity to complete simple tasks. In the absence of evidence to the contrary, it may be that she learns better in familiar situations, and in a context she understands. She may learn better through making small steps within activities. Areas which may need to be developed include her ability to learn from whole tasks, and her response to external motivation, such as adult praise, and her ability to learn from novel stimuli and in unfamiliar situations.

#### **8.4.1.6 Second task**

Kate and her teacher undertook a second task. As described above, Kate did not take part in many whole activities, but rather in small parts of many activities within her daily routines. No task which she regularly undertook proved suitable, but a new task was devised instead. This involved skills her teacher was encouraging, that is, finding and reaching for objects. A small toy was used, called a 'beat box' which Kate found motivating. It makes a quasi-musical noise, and flashes. It was placed in a tray filled with dry pasta shapes. The aim was for Kate to reach into the box and locate the toy. Kate's learning style had been recognised as having the following elements which were incorporated into the task:

- preference for familiarity. The teacher was asked to thoroughly acquaint Kate with the beat box in sessions before this was undertaken, so that the toy was familiar to her
- use of visual, hearing and tactual modalities. The beat box made sounds, flashed and Kate's hands were manipulated
- use of small steps. Kate did not have to complete more than one stage.

Until this time, Kate had completed very few actions without physical prompting by manipulation, often throughout an activity.

#### **8.4.1.7 Evidence**

This task was recorded for ten days. During the first four days Kate was described as '*interested*' or '*happy*' or '*listening*' and she enjoyed the music, but did not touch the toy. She allowed her hands to be placed in the pasta. On the fifth

day Kate put her hand on the toy and kept it there. On the seventh day she put her hand on the toy four times. On the ninth day she touched the toy again but her teacher thought this was by accident. Kate's response to the teacher's use of tactual prompts in this situation appeared quite negative. The teacher made seven comments about how Kate withdrew her hands after having them placed on the pasta.

Although Kate's achievement with the beat box toy seems small, this was in fact a considerable success for this child whose independent action was very limited and who did not search for objects. It would seem likely that with a longer period of time Kate could have achieved more.

#### **8.4.1.8 Second task; the sequel**

Unknown to me, the teacher undertook a further task with Kate. She believed that Kate was not sufficiently motivated by the first toy. She used the vibrating toy which had been the reward for the taught task. Because we did not design the task together, I cannot be sure how the teacher approached this task with Kate. However, she had previously understood the aims of the second task. This item was not particularly visually attractive, although in the tray it did have auditory properties as well as vibratory ones. The teacher recorded ten further days of information relating to Kate finding this item in the tray. It appears that she had found a more motivating toy than I had. Kate started to move her hands around in the tray on the first day, and found the toy on the second. She grasped it on the third day after a second tactual prompt. She put her hand on it on the fourth day. She was more accepting of tactual prompts, and her teacher did not comment that she withdrew her hands in any session, and once wrote:

*happy to have her hands put back in pasta.*

Kate grasped the toy on day six and seven. On day nine she required two tactual prompts to hold it, and on day ten she touched it and left her hand on it. Because this task was not described in the same way for Kate as the one I had set, it needs to be interpreted with some caution. However, it appears that Kate may have required a more intrinsically motivating task and once this had been

found she responded better. This might well have been due to other factors besides her learning style as motivation may have increased task activity.

## **8.4.2 Aspects of style for Siobhan**

All aspects of style were supported by evidence, using four sources and with the involvement of fifteen people.

Siobhan's teacher said:

*she has no sight, and if she does have any hearing, it is very very limited, virtually none.*

Siobhan came into category one for both vision and hearing.

### **8.4.2.1 Prompt modality preference**

Siobhan was considered to have no useful vision and no useful hearing by the staff working with her, although she was reported to have attended to sounds and lights earlier in her life. No visual-only prompts were observed and only two auditory-only prompts were seen, to neither of which Siobhan responded. The observation evidence was therefore expanded for this child to include three differentiated types of tactual/kinaesthetic prompting: hand over hand kinaesthetic prompt (manipulation), slight touch and vibrating prompt. It was not possible to discriminate between 'slight touch' and 'manipulation' in the interview and written record evidence, although 'vibration' was mentioned. Thus two categories, tactual/kinaesthetic and vibration were used for the interview and written record evidence.

#### **8.4.2.1.1 Visual prompts/auditory prompts**

When observed Siobhan made no responses to auditory or visual stimuli, and the staff interviewed about her said she had no useful vision or hearing. The written records said that Siobhan had, previously, made some response to light and sound although nothing had been reported on her hearing for the previous five years; the last report of response to light was nine years before.

#### **8.4.2.1.2 Tactual/kinaesthetic prompts**

Siobhan's predominant response to touch during the observation was to reject or push away stimuli or hands. However, she did sometimes co-operate or



return to an item she had rejected. She also responded positively (taking or holding objects) to all three types of prompt, slight touch, hand over hand movement and vibration. In written records Siobhan was described as exploring and manipulating objects, but the words ‘*tolerates*’ and ‘*allows*’ were used in relation to touch prompts:

*she varies as to how much hand over hand assistance she will tolerate (Review 96)*

The descriptions of her response to vibration were more positive, but it was not apparently used as a prompt for learning:

*Siobhan responds extremely well to her resonance board. She likes to lie...on it and feel the vibrations (Review 02)*

#### **8.4.2.2 Taught task**

Despite the evidence that Siobhan did not see or hear anything the task was carried out in the same way, with visual and auditory prompts given. Evidence from the phase two studies showed that teachers may have underestimated children’s ability to use their senses for learning. The schedule was slightly adapted, to allow for the inclusion of different tactual prompts, as the observation had shown vibration to be useful to Siobhan at attention level at least. Following each tactual/kinaesthetic prompt, a vibration prompt was added, by turning the massager on.

#### **8.4.2.3 Prompt modality preference**

Siobhan’s responses to the taught task are presented in table 27. Siobhan showed:

No positive responses or negative responses other than ignoring them, to any visual or auditory prompt.

4 positive responses to touch/kinaesthetic prompts and 3 negative responses (57% and 43%).

6 positive responses and no negative ones to vibration prompts (100%).

The data is rather confused about the significance of the vibration prompt, but it appears that vibration does attract Siobhan’s attention.

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Her responses to vibration were therefore the most positive, although it was not apparently developing learning in this task.

Her responses to visual and auditory prompts were completely negative.

**TABLE 27 SIOBHAN'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	5				
Visual prompts		4 n/r	5 n/r	5 n/r	<b>+ve response 0</b> <b>-ve/no response 14</b>
no record		1			1
Auditory prompts		5 n/r	5 n/r	5 n/r	<b>+ve response 0</b> <b>-ve/no response 15</b>
no record					
Tactual prompts		3 n/r	1 transfer left to right	3 held explored	<b>+ve response 4</b> <b>-ve/no response 3</b>
no record		1		1	2
Vibration prompts		1 held 1 would not give up	1 grab 1 held – pushed 1 tried to turn held if vibrating	1 held when vibrating and attempt to turn	<b>+ve response 6</b> <b>-ve/no response 0</b>
Total positive and negative response					<b>+ve response 10</b> <b>-ve/no response 32</b> <b>no record 3</b>

n/r = no response

#### **8.4.2.4 Other aspects of style for Siobhan**

##### **8.4.2.4.1 Novelty/familiarity**

The evidence concerning Siobhan's response to new and familiar situations was very interesting. The interview evidence described Siobhan's preference for, and increased learning in, situations she knew:

*She's quite happy to be in their company, she's quite happy for them to touch her, or be near her, as opposed to people she doesn't know at all, she wants them to be away from her (interview).*

However, a teacher also described her surprise at seeing her with someone new and her enjoyment of this:

*I was gobsmacked that she got on so well with that chap, that's just so out of character for Siobhan (interview.)*

The evidence from written records and from observation also showed that Siobhan did in fact enjoy and learn from new and novel situations:

*Cat toy – unfamiliar vibrating object – pushed this away twice then three times handled with hands and feet when brought close to her (observation notes).*

It seems that the well trained teachers, believing that Siobhan as a deafblind child would benefit most from familiarity (see 8.5.2.1.), may have underestimated the value of new situations for her learning.

##### **8.4.2.4.2 Person/object orientation**

Siobhan appeared rather passive during observation, showing little response to either people or objects, sometimes pushing both out of her way. On occasion she apparently sought contact with people, hugging a member of staff (and then pushing her away). One of the staff working with Siobhan, when asked in the interview if Siobhan was a 'people person' replied:

*No, I think she is very much a Siobhan person, she's definitely got autistic tendencies (interview).*

In the interview staff said that personal contact was important for Siobhan, but this may have been a reflection of the importance of the relationship to the

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staff. Siobhan appeared to be at least as interested in the objects as the people handling them:

*(teacher) passed her vibrating animal... each time (Siobhan) reached for object, not (teacher) (observation notes).*

The written records described Siobhan's increasing tolerance and awareness of people, but over thirteen years the picture did not seem to have changed very much:

*Siobhan has become more willing to let people into her world (Review 93)*

*Siobhan has become increasingly aware ... (of) other people during the year (Review 98)*

### **8.4.2.4.3 Internal/external motivation**

There is some evidence from observation and from interview that Siobhan is self-motivated, doing things because she enjoys them or wants to do them. Her activity is described as:

*totally dependent on Siobhan's mood (interview).*

### **8.4.2.4.4 Context/out of context**

Evidence from all three sources agreed that context helped Siobhan to learn:

*the daily class routines have now come to have meaning for Siobhan and she becomes cross if the routine is missed out (Review 93)*

and lack of context made learning difficult:

*she seems not very interested in food at the 'wrong times' – i.e. not lunch and break times (Review 97).*

There were no examples in the observation of Siobhan being offered activities out of context, nor was this mentioned by staff who currently work with her.

### **8.4.2.4.5 Confidence/lack of perseverance**

There was some evidence from all three sources which indicated that Siobhan was able to complete small tasks which she understood by herself. For example, she would move from one chair to another (part of her routine)

independently. She would also seek and engage in some play activities even without support. Staff described her as having a strong will. However, because her understanding of tasks was very limited (as described above) she was unlikely to be able to make something happen for herself.

#### **8.4.2.4.6 *Tempo of learning***

There was a little evidence relating to Siobhan's speed of approach in learning situations. She appeared to act slowly, with long gaps between attempts at making something happen:

*considerable pause between each supported attempt to put spoon in mouth  
(observation notes.)*

#### **8.4.2.4.7 *Small steps/whole task***

There was little evidence here and none was mentioned in the interview. In observation, Siobhan was seen to complete only small parts of any task, and in written records it was described as:

*the opportunity to learn through very small steps (Review 02).*

It appears that Siobhan, like Kate, was not generally offered the experience of whole tasks, and may have only understood steps in a very small chain and limited context. She would hold items (flannel, toy) when prompted, but may not have understood that she was holding them for some purpose.

### **8.4.2.5 *Summary of evidence for Siobhan***

#### **8.4.2.5.1 *Prompt modality preference***

The evidence for Siobhan shows that she does not use visual or auditory modalities at all for learning, and that physical intervention by touch or movement was frequently resisted. Vibration may be positive in terms of interacting with objects, but may not assist learning of tasks.

#### **8.4.2.5.2 *Other aspects of style***

She uses both person-oriented and object-oriented routes to learning, interacting with both, but mostly for her own ends and on her own terms. Siobhan may benefit from context to assist her learning, but she likes new

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experiences. She has some ability to complete short sequences without prompting, but her pace of learning is very slow, with long gaps between any attempts to complete tasks. She completes only very small sequences or parts of activities.

Siobhan may only be presented with small parts of tasks, as described for Kate, above. Finding ways to allow her to experience the whole learning situation is difficult. Likewise, the activities she experiences are almost all familiar, and are all in context.

### **8.4.2.6 Second task**

Siobhan's teacher undertook a second task, although like Kate, Siobhan's involvement in tasks was piecemeal and the task designed was not part of her daily routine. It was however a more typical classroom experience for her than the assessment task. It involved the teacher's aims for Siobhan to explore and examine objects.

Siobhan's task was to find a vibrating toy in a box (about 18" square) of soft shredded paper. The toy was one of three new ones, which alternated from day to day, and the activity was also new. Siobhan's learning style had been recognised as having the following elements which were incorporated into the task:

- interest in novelty (the toys and the activity were new)
- preference for interaction with objects over people (the teacher was asked to be limited in her involvement)
- attention gained by vibration (toy vibrated and so moved the box it was in)
- no requirement for a quick response (the item continued to vibrate even if she did not immediately seek it).

Tactual prompts were the only prompts which had been available to Siobhan and these were to be used when required.

#### **8.4.2.7 Evidence**

Twenty days of evidence were recorded. For the first six days the teacher described Siobhan as interested in the box and Siobhan reached in and took out objects on four occasions. On two others she explored the box, which was also moving. On the following four days she maintained an interest in the box, but did not seek the objects inside it, and on one occasion threw it away. On the next two days she found the objects but then discarded them, although on the following day, (day thirteen) she took an object and held it for an hour. The following day she took an object and used it in a novel way, against her face and to her toes. The fifteenth day she tried something else new: she tipped the box over and climbed on it. The next day she was not interested in the box or contents and the following days she took out objects on three occasions, and once was interested in the box but not what was inside it.

While Siobhan's achievements seem small, previously she did not always reach for objects or maintain an interest in them. There seems to have been some success with this task. It appears that she *was* more interested in the objects when they were new to her, and became less interested as they became familiar. The use of vibration certainly appeared to maintain her interest, and the low level of involvement of the teacher allowed her to explore and perhaps to be more successful about holding objects than she was in other contexts. The recognition and application of Siobhan's learning style preferences helped her to achieve this task.

#### **8.4.3 Aspects of style for Fallon**

There was evidence for all the aspects of style from all four sources, with the perspectives of eleven people reflected in the data.

Fallon's teacher considered she made some use of vision (category four):

*her vision seems to serve her well*

and hearing, but she had a profound hearing loss in one ear and a more moderate hearing loss in the other (category three).



### **8.4.3.1 Prompt modality preference**

Most prompts observed directed to Fallon were deliberately multi-modal, including spoken words or auditory prompts. Staff commented in the interview and in written records on her vision, hearing and tactual senses. Her response to the taught task is presented in 8.4.3.2.

#### **8.4.3.1.1 Visual prompts**

When observed, Fallon generally responded positively to visual prompts (signs, objects, modelling) although sometimes she did not respond at all. Her teacher considered vision to be an important route for learning:

*(she) learns from what she sees happening, and what she is shown (interview).*

#### **8.4.3.1.2 Auditory prompts**

Speech and sounds were used to prompt Fallon, and when observed she usually responded positively. In written records it was reported that Fallon:

*makes use of residual hearing to attend to activities (Statement 00).*

#### **8.4.3.1.3 Tactual/kinaesthetic prompts**

During the observation, her response to numerous tactual/kinaesthetic prompts were frequently negative (resistant, non compliant or inattentive):

*(staff) hand over hand pass the bells (3x) – no attempt to do it (observation).*

However her teachers described her as a child who likes to act and to handle materials, so it may be that different types of prompting involving her movement senses, but not necessarily using hand over hand prompts, would be more useful.

### **8.4.3.2 Taught task**

Fallon's task was to unlock a box and padlock (see photograph, appendix 13). The records of this task are presented in table 28.

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In the recorded responses to the task, Fallon showed:

7 positive responses and 2 negative ones to visual prompts (78% and 22%).

4 positive responses and 5 negative ones to auditory prompts (44% and 56%).

6 positive responses and 4 negative ones to tactual prompts (60% and 40%).

### **8.4.3.3 Prompt modality preference**

Her responses to visual prompts were therefore the most positive.

Her response to auditory prompts were the most negative.

She showed positive responses to all three types of prompts, but showed increased negative and disruptive responses to auditory prompts.

Her pattern of response was mixed, but suggests that she received clearest information from visual prompts, whereas auditory prompts (language-based in this case) were the most confusing.

**TABLE 28 FALLON'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	5				5
Visual prompts		3 attended 1 key wrong way	2 chose, used keys 1 played with key 1 disruptive	1 completed	<b>+ve response</b> 7 <b>-ve/no response</b> 2
no record		1	1	4	6
Auditory prompts		1 attended 1 attempt 2 other disruptives	2 forcing zips 1 key in (wrong)	1 attempted task 1 disruptive	<b>+ve response</b> 4 <b>-ve/no response</b> 5
no record		1	2	3	6
Tactual prompts		3 completed or attempted 1 attention 1 distracted	1 not very interested 2 temper/angry	1 some attempt 1 pleased	<b>+ve response</b> 6 <b>-ve/no response</b> 4
no record			2	3	5
Total positive and negative response					<b>+ve response</b> 17 <b>-ve/no response</b> 11 <b>no record</b> 17

n/r = no response

### **8.4.3.4 Other aspects of style for Fallon**

#### **8.4.3.4.1 Novelty/familiarity**

The evidence indicated that Fallon learnt well from familiar situations:

*she's quite good at working with a range of people, probably on tasks specific to that person... (interview)*

but also showed that she enjoyed new things:

*she very much likes novel experience or toys, she likes things with a novelty aspect (interview.)*

The confusion of this evidence may be partly related to the expectation that familiarity would be important for Fallon, because she was a deafblind child.

#### **8.4.3.4.2 Person/object orientation**

The evidence showed Fallon learning from interactions with people and from objects alone. In written records it was reported:

*she will often resist intervention from an adult (Review 99)*

and:

*she is rarely motivated by interaction and continues to be primarily object oriented (Statement 00).*

However, when observed, Fallon approached other children and sought interaction with adults.

#### **8.4.3.4.3 Internal/external motivation**

All three sources demonstrated consistently that Fallon is self-motivated, that she attempts and completes tasks because she is interested in that activity herself. All adult directed learning had first to engage her interest:

*it's got to be fun, it's got to be kind of relevant to her, and interesting to Fallon, from her sphere of interest (interview).*

#### **8.4.3.4.4 Context/out of context**

No activity which was out of context was offered to Fallon during the observation. The interview and written record data showed that Fallon preferred to learn in context, that she is:

*heavily dependent on routine (Statement 00).*

#### **8.4.3.4.5 Confidence/lack of perseverance**

There was evidence from all three sources for this aspect of style. Fallon was described as able to initiate and complete tasks herself, but this was not always seen in the observation, possibly due to her motivation. Written records show that she dismantles small objects and operates gadgets in which she is interested, showing her perseverance when motivated.

#### **8.4.3.4.6 Tempo of learning**

There was some evidence for this aspect of style from the observation. It appeared that Fallon was sometimes able to repeat an action several times for an end result, but that she did not always do so.

#### **8.4.3.4.7 Small steps/whole task**

During the observation Fallon appeared to be offered and to undertake tasks as wholes and to complete them:

*engaged in complex water play, (several actions: point, fill, pour, refill) (observation).*

She showed anticipation of a sequence, turning to look for the cymbal after playing the drum. Evidence from other sources also supported this, though indicated that sometimes she learnt only parts of tasks.

### **8.4.3.5 Summary of evidence for Fallon**

#### **8.4.3.5.1 Prompt modality preference**

Fallon's teachers said that she learnt effectively through visual demonstration, and the taught task supported this. However, while adults thought she used her hearing for learning, the taught task showed Fallon responding with frustration to auditory (language) prompts, for more than half the time. The observation and the taught task showed two different aspects of Fallon's

learning: while being observed, Fallon frequently resisted or rejected tactual/kinaesthetic help, but she found this useful more often than not during the systematically taught task. This may be related to the difference between the uni-modal prompts used in the taught task and the mostly multi-modal prompts used during the observation. However, it does suggest that her teachers need to reappraise the value of auditory and language prompts for her.

#### **8.4.3.5.2 Other aspects of style**

Some of the evidence showed that Fallon was able to use different situations for effective learning, that her style in some aspects was versatile. There was some evidence for strong preferences. For example, Fallon needed tasks which interested and motivated her. She may have preferred learning from objects rather than from people, but this aspect of her learning may be undergoing change. She could undertake whole tasks and persevered to see things through if they interested her. There was no clear evidence regarding her tempo of learning and she appeared to learn both from familiar and novel situations. Whether context was an important variable is not clear. It appeared that Fallon was offered few opportunities to learn out of context. Such opportunities might be important in helping her to generalise skills.

#### **8.4.4 Aspects of style for Shula**

Evidence for all aspects of style was found in all three sources for Shula, and was provided by nine people.

Shula used both her hearing and vision well (category four for both vision and hearing). Her teacher said that she has some specific visual problems, particularly with her visual field, and probably some processing difficulties, but that in most contexts she appears to use her vision well. Of her hearing, she said:

*she's coping very well with what she's got, and uses that to her full potential.*

#### **8.4.4.1 Prompt modality preference**

Shula was considered to have useful vision and hearing. For her, many prompts during the observation were multi-modal, as when a person standing within her visual range spoke to her. The method used to attract her attention was recorded for the observation.

##### **8.4.4.1.1 Visual prompts.**

Written records report that:

*Shula is able to learn effectively by imitation and modelling (Statement 97).*

The observation, written records and interview agreed that Shula used visual cues effectively for learning. Shula usually responded positively to the many signs used with her. Vision appeared to be a useful mediator for all her learning tasks.

##### **8.4.4.1.2 Auditory prompts.**

Shula's teachers believed that she was using her hearing quite effectively:

*for a girl with hearing difficulties, she is coping very well with what she has got (interview).*

During the observation, however, where most auditory prompts were spoken words, her response was less effective. On many occasions she did not attend, or sometimes did not comply.

##### **8.4.4.1.3 Tactual/kinaesthetic prompts**

Shula, like Fallon, was described as a physically active child who likes to fiddle with things. Like Satya in the phase two studies, she is physically restless during class sessions. Her teacher reported that hand over hand techniques were sometimes effective, but few such interventions were observed, and if they were, Shula sometimes ignored them:

*physical intervention to prevent her opening the gate...; S continued to stand near gate (observation).*

Shula might benefit from a different style of tactual/kinaesthetic prompts, not including touching or manipulation.

#### **8.4.4.2 Taught task**

Shula's task was to open bottles with a bottle opener. The teacher and I had difficulty in devising a sufficiently demanding task for Shula, who may have been the most able child involved in the inquiry. As we were unsure how fast she would learn this task, we agreed back up tasks of other opening mechanisms. A photograph of some of these is in appendix 13. In fact, Shula was able to open all the bottles on the first or second trial. Although some records were kept of her responses, and a video was made, they are not very informative, since Shula hardly had time to use any sort of prompting! Her responses are shown in table 29.

In the recorded responses Shula thus showed:

5 positive responses and 0 negative ones to visual prompts; 5 out of 5 attempted events – 100%. However, she never got beyond a gesture prompt.

3 responses and 0 negative ones to auditory prompts; 3 out of 3 attempted events – 100%. However, she never got beyond a gesture prompt.

2 positive responses and 3 negative ones to tactual prompts out of 5 attempted events (40% and 60% respectively.)

#### **8.4.4.3 Prompt modality preference**

It is hard to interpret such limited data. Shula appears to be learning well from visual and auditory prompts, but she had a negative response to manipulation and physical prompting on some occasions.



**TABLE 29 SHULA'S RESPONSES TO PROMPTS**

Prompt type and form	initial	attention	gestures	assistance	responses
no record	5				5
Visual prompts		1 came to table, 3 took drink	1 tried task (not complete) 3 unnec	4 unnec.	<b>+ve response</b> 5 <b>-ve/no response</b> 0 <b>Unnecessary</b> 7
no record					
Auditory prompts		1 signed 3 unnec	2 achieved 2 unnec	4 unnec.	<b>+ve response</b> 3 <b>-ve/no response</b> 0 <b>Unnecessary</b> 9
no record		1			1
Tactual prompts		2 didn't like 2 unnec	1 tried 1 rejected help 2 unnec	1 completed 3 unnec.	<b>+ve response</b> 2 <b>-ve/no response</b> 3 <b>Unnecessary</b> 7
no record					
Total positive and negative response					<b>+ve response</b> 10 <b>-ve/no response</b> 3 <b>no record</b> 5 <b>Unnecessary</b> 23

n/r = no response .

unnec. = unnecessary. This indicates that these prompts were not used because Shula had already tackled the task.

#### **8.4.4.4 Other aspects of style for Shula**

##### **8.4.4.4.1 Novelty/familiarity**

In the interview Shula's teacher said that repeating things helped her to learn and no new situations were described in written records or the interview. One task which was new was also much disliked by her (papier mache – which meant getting her hands very messy) so her dislike of this could be unrelated to difficulty with new situations.

##### **8.4.4.4.2 Person/object orientation**

Evidence from all three sources showed that Shula was interested in people above objects:

*in office, waited for attention from admin staff before giving her list (observation).*

One document however stated:

*she finds it difficult to interact with other children (Statement 97).*

The observation showed Shula seeking interaction above food and rather than playing. She appeared strongly oriented to people, and found people motivating.

##### **8.4.4.4.3 Internal/external motivation.**

From all three sources there was considerable evidence that Shula liked to be praised, and sought external motivation:

*she likes to do something and be praised for it (interview)*

and this may be related to her orientation to people. She also showed interest in activities for their own sake, and is reported to have some particular favourites:

*she is highly motivated by gardening (Review 01).*

She was observed initiating tasks or activities because she wished to – for example, making silly faces to herself in a mirror.

#### **8.4.4.4.4 Context/out of context**

The evidence, mainly from written records and interview, indicated that structure was of significant benefit to her learning:

*Shula can direct her attention to structured and motivating tasks (Review 01)*

However, during the observation she completed a small task, when asked, within a larger routine (cleaning her glasses while working on her timetable) perhaps showing that she is able to work outside of context.

#### **8.4.4.4.5 Confidence/lack of perseverance**

Evidence from all three sources demonstrated that sometimes Shula could complete tasks unaided, but that she might require prompting to finish most activities:

*has continued to need continuous prompting and attention (Review 01).*

#### **8.4.4.4.6 Tempo of learning**

Shula was observed to move rapidly from one thing to another, making many attempts at most things. In written records most contributors describe her concentration as limited, and she is also described as 'restless'. However, her teacher, in the interview, when asked to describe Shula's learning style said:

*a very slow style – time for some input, some laughs (interview).*

It is not quite clear what she meant by this.

#### **8.4.4.4.7 Small steps/whole task**

Shula appeared to see whole tasks, and to understand the nature of sequences in learning. A report described her excellent problem-solving skills, where she moved equipment about to enable her to plug in a tape recorder.

### **8.4.4.5 Summary of evidence for Shula**

#### **8.4.4.5.1 Prompt modality preference**

Shula used visual, auditory and tactual/kinaesthetic prompts to help her learning. However, she showed some resistance to some forms of tactual

guidance and she may benefit more from a different approach to this type of prompt.

#### **8.4.4.5.2 Other aspects of style**

Some preferences in aspects of style were clear for Shula. She enjoys adult praise, and she prefers to use adults as mediators in learning. Although she is aware of the whole sequence of learning tasks, she sometimes needs prompting to complete tasks. She is more likely to make a series of rapid attempts at something than to plan first. She uses structure to help her to concentrate, but it is not clear whether she enjoys new or familiar situations and activities, or which she finds most conducive to learning.

### **8.4.5 Aspects of style for Ruth**

Evidence related to seven of the eight aspects of style was found for Ruth, no information relating to her learning in context/out of context was seen.

Information came from three people.

Ruth had some very useful vision (category four)

*basically she uses the vision that she's got extremely well*

but was considered profoundly deaf (category one):

*there are no consistent responses to sound. We've had a Scottish piper walk through that door (approx 10 ft away) when she's had her back to him playing the pipes, and that is extremely loud.*

#### **8.4.5.1 Prompt modality preference**

During the observation, most prompting was multi-modal, involving aspects of touch, sound and vision. Staff spoke when they signed to Ruth, but no use of discrete and deliberate auditory prompting was recorded. Ruth was considered profoundly deaf and unable to respond to sound except as vibration by contributors to the interview and written record data. It was not possible, because of staff changes and timing, to carry out a taught task assessment with Ruth.

#### **8.4.5.1.1 Visual prompts**

The teacher observed working with Ruth used signs and visual models, and most of these were successful in gaining attention and a learning response. In the interview it was reported that:

*Ruth learns a lot from observing (interview).*

#### **8.4.5.1.2 Auditory prompts**

Staff contributing to the interview, and written records, showed Ruth to be profoundly deaf and no discrete auditory prompts were observed.

#### **8.4.5.1.3 Tactual/kinaesthetic prompts**

When observed Ruth sometimes responded positively to tactual/kinaesthetic prompts but she also sometimes ignored these prompts. The written records report her enjoyment of exploring and manipulating materials.

### **8.4.5.2 Other aspects of style for Ruth**

#### **8.4.5.2.1 Novelty/familiarity**

Ruth was observed to be very interested in a relatively new change to one of the rooms she worked in (examining new furniture there) and new furniture was described as a particular interest of hers. As described by staff working with her, most of her learning happened in familiar situations, which were considered to improve her learning:

*where experiences and signs are new, her communication is at the imitation level (Review 02).*

#### **8.4.5.2.2 Person/object orientation**

The observation, interview and written records provided a variety of evidence relating to her orientation to study. Sometimes she chose to observe objects while ignoring people; for example on entering the science room she walked around checking the objects, but not greeting people; but she also turned to an adult when she was upset about a change in routine. When interviewed, staff reported that she had begun to build closer relationships with particular

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people, but that she still found objects very significant. One of her teachers in the interview described how it was important for Ruth to learn:

*to actually want to copy you, to find copying a human more interesting than watching a ball run (interview).*

It seemed that Ruth was learning to choose to interact with people rather than with objects, but that she still found objects more absorbing than people, and this might be the way to engage her interest.

### **8.4.5.2.3 Internal/external motivation**

All three sources provided consistent evidence that Ruth's motivation was entirely internal, and for things which interested her. There were no descriptions or observations of her response to adult praise or external rewards. She did, however, show some interest in her own finished art work:

*Ruth is proud of her work (Review 02)*

but she would not learn from what others wanted her to do.

### **8.4.5.2.4 Confidence/lack of perseverance**

Ruth was observed completing tasks and her teachers reported that she was able to initiate learning sequences:

*Ruth initiates role play linked to family scenarios (Review 02).*

It appears that Ruth is able to persist with tasks and see them through to their conclusion.

### **8.4.5.2.5 Tempo of learning**

When observed, Ruth sometimes generated her own pace of learning, completing an activity such as taking off her socks without prompts and with several self-initiated attempts, but her teachers said that she worked slowly. Success, they said, was achieved:

*by giving her time and not rushing her (interview).*

#### **8.4.5.2.6 Small steps/whole task**

During the observation Ruth clearly showed her ability to complete a series of actions related to a whole task:

*completed second half of socks on and completed shoes on and doing up (observation).*

Staff working with her considered that she was learning through small steps, but these may have been within whole tasks.

#### **8.4.5.3 Summary of evidence for Ruth**

The evidence shows that Ruth responds better to visual learning than to auditory or tactual/kinaesthetic prompts. She does, however, like to feel and manipulate objects herself. Her motivation was internal, and she was learning to include people in her learning, following an initial focus on objects. She worked quite slowly, becoming distracted, but she was able to see tasks through to their conclusion. She responds better to familiar situations. There was no evidence as to whether she learnt better in or out of context.

### **8.5 Discussion**

#### **8.5.1 Common patterns in prompt modality preference and deafblindness**

Modality continued to be the aspect of learning style about which most evidence was available. As before a wide variety of style preferences were seen. One child did not benefit at all from visual or auditory prompting, and one responded well to both of these.

**TABLE 30 RESPONSES TO PROMPTING**

Child	Most positive response to prompts	Least positive response to prompts	Other evidence
Kate	tactual/ kinaesthetic	visual	Interview; auditory positive
Fallon	visual	auditory	Interview; auditory positive
Siobhan	tactual/ kinaesthetic	(visual and auditory)	

(this information cannot be recorded in the same way for Shula and Ruth because the taught task assessment was not completed).

For comparison, these are the responses to prompts from the phase one and two studies.

Child	Most positive response to prompts	Least positive response to prompts
Alice	auditory	visual
Helen	tactual/kinaesthetic	auditory
Debbie	tactual/kinaesthetic	auditory
Usha	auditory	tactual/kinaesthetic
Grace	auditory/visual	tactual/kinaesthetic
Caroline	tactual/kinaesthetic	auditory

While tactual/kinaesthetic prompts are overall the most successful sorts of prompts, and visual ones the least, it is clear that there is a wide variety of style amongst these nine children. Despite the statement that:

many deafblind pupils will have to learn... by having their hands guided (QCA 1999)

this appeared to be an aversive procedure for some, and was not the best way of teaching for almost half the children. This important issue needs further consideration (and is discussed in chapter nine).



## **8.5.2 The education of children with deafblindness.**

### **8.5.2.1 Current trends in the education of deafblind children**

There is little literature, either books or research, relating directly to the education of deafblind children in the UK. This may be due both to the very low incidence of deafblindness and the relatively new development of the specialist field of deafblindness. Much of the work that does exist (in the UK and overseas) is based on the various writers' experiences but not on systematic investigation. In some of this literature, good practice for teaching deafblind children is attributed to certain types of presentation and management, some of which are related to aspects of learning style examined in this inquiry. Some of these are:

- the emphasis on development of communication, perhaps with neglect of developing competence in handling of objects (QCA 1999, Murdoch 1986, Pease 2000, Rødbroe & Souriau 1999)
- the use of context and routine to assist in learning (Bradley & Snow 1994, QCA 1999, Blaha & Moss 1991)
- the use of small steps for learning goals (Dale 1986, QCA 1999, Hodges 2000)
- limiting the use of novel stimuli (Engelman et al. 1998, Moss & Hagood 1995)

Three of these aspects are mentioned, for example, in the 'government published' QCA document of 1999, and professionals in the field of deafblindness might be expected to consider that good teaching incorporates these aspects. Training and guidance in centres of excellence and in teacher education probably encourages teachers to adopt them. Consequently, there might be little opportunity to see how the child might respond to involvement in whole activities, novel experiences, and learning out of context.

### **8.5.2.2 Issues in deafblindness; implications for pedagogy**

This inquiry challenges some aspects of accepted pedagogy for deafblind children, for example, the benefit of familiar over novel stimuli, the consistent

structure of events and routines for daily living and academic work, and the priority for communication (orientation to people) over other skills. These widely held and commonly expressed opinions, often seen in practice, on the preferences of deafblind children for certain features of learning experience have not been subject to evidence-based inquiry. Communication skills are important where they can be acquired, and will add to the quality of life, but deafblind children may be able to learn self-help and vocational tasks without the ability to communicate at a similar level. Success in these tasks may begin to generate thinking skills and allow mental development which assists the deafblind child to have reason to communicate and something to talk about (Meshcheryakov 1979).

The emphasis on small steps (in the teaching of deafblind children and others with complex needs) may have led to children becoming unaware of the whole task in which they are working. Because the learning of children with deafblindness is already fragile and fragmented, exposure to such random events cannot be likely to assist. Children with disabilities of sight, and particularly those with the most severe visual impairment, are perhaps especially susceptible to this difficulty, because they are not able to learn incidentally from the visual context or cues.

The emphasis on learning in context may have led to a lack of opportunity for children to generalise skills, with children rarely offered the opportunity to work outside the situation in which they first acquired skills. While this approach may be valuable as an initial teaching tool, it severely limits the life chances of children and their ability to build on their learning.

### **8.5.3 Ability and assessment of children**

One of the teachers had carried out a formal assessment (using the Gallier Azusa scale) of one of the children each school year. Another had used the infant baseline when the child reached the appropriate age. Three out of the five children had not been formally assessed by their teachers (two of whom were qualified/qualifying teachers of deafblind children).

Two of the children were more capable in functional skills than those in the phase one or two studies, and it was harder to design a successful taught assessment task for these pupils. One of these pupils became frustrated with the fiddliness of the task, and one achieved it far too easily. Two other children, with fewer functional skills, did not achieve their tasks. Once again, there appeared to be some disparity between what teachers thought their pupils would do and what they actually did.

### **8.6 Conclusion and summary**

The phase three studies were designed to find suitable methods for identifying and examining further aspects of learning style in deafblind children, to see how these could be assessed, and what application they had to classroom learning. The studies reported here showed that methods drawing on multiple data sources to compare, contrast and confirm evidence had allowed individual profiles of learning style to be built up. The use of multiple sources had been a valuable addition to the taught task assessment, allowing for the inclusion of more points of view over a longer time and for the use of more natural situations. This had proved more useful also than the method tried in the pilot study.

The aspects of learning style chosen for inclusion were relevant to the deafblind children in the phase three studies. There was however much more evidence for some aspects than for others, and these may prove to be the more significant styles. For two children, incorporating learning style preferences in these aspects into a classroom task improved learning, although for these two learning was slow.

The results of the phase three studies add evidence to the argument that learning style is relevant for deafblind children, as shown in the phase one and two studies. The difference in learning style preference between individuals, not a shared style due to deafblindness, is supported further. In fact, some of the other aspects of style show very strong trends to different preferences, for example, in person/object preference, where Shula is seen as strongly oriented to people, and Siobhan to objects. This evidence has led to

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a possible challenge to accepted good practice in teaching for pupils who are deafblind.

The inquiry described in this chapter and the previous seven chapters has raised issues relating to the aspects of learning style and how these might be assessed in deafblind children and the implications they have for teaching and learning. The nature of learning style and its assessment requires further consideration and research. The evidence relating to the practice and value of assessment needs evaluation. There are also questions concerned with the effectiveness of the methodology and methods used in this inquiry and the ethical issues related to these. A discussion of these factors and the overall conclusions of the inquiry are presented in chapter nine.

## Chapter nine

### **Learning style in deafblind children**

К портрету Рафаеля ( И. А. Соколянскому)	To a portrait by Rafael (To Sokolyansky)
Твоей Мадонны лик прекрасный Мне недоступно созерцать, Но жизнь твою, твой гений ясный Постигла я. И вот опять.	For me there is no access to your Madonna's face before my eyes But I have touched your life and, through your Brilliance, in my soul arise
В душе моей родятся звуки... Все громче, громче струнный звон. Под их аккорды стихли муки, А ум мой светом озарен.	Again and louder, louder growing The sounds of strings; beneath which die My torments, banished as light flowing Illuminates my mind. And I
В мечтаньях вижу я картину Чудесной кисти колдовство И молодую Форнарину ... И толп нарядных торжество.	Have seen the magical creation The pictures conjured by your hands The well dressed crowd in great elation And there where Fornarina stands <sup>1</sup> .
Olga Skorokhodova 1990 (first edition 1972) pg 386	

#### **9.1 Introduction**

This inquiry began from my interest, as a practitioner, in assessment procedures for deafblind learners and over time evolved into an inquiry into the value of the concept of learning styles in this population. It was intended to examine the questions:

- What is known about the assessment of deafblind children?
- How valuable is such assessment, particularly in relation to improving teaching and learning?
- Is the concept of learning style relevant to deafblind learners?

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<sup>1</sup> my translation

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- Can such an assessment be used to improve teaching and learning?
- Is case study methodology appropriate for studying deafblind children as learners?
- What are the ethical issues for this population?

Seeking the answers to these questions led to a review of literature relating to assessment for deafblind people; to a survey investigation of the practice of assessment; and to a review of the concept of cognitive style supported by a series of case studies exploring the issue of style in relation to deafblind children, in particular, the use of learning style assessment to improve teaching and learning for these children. The benefits of a case study methodology have been evaluated, as well as the ethical issues relating to both the children and the adults. This chapter summarises the products of this investigation, and discusses the issues of interest and the directions for future research which have arisen from the inquiry. The first issues discussed are those relating to the performance of the inquiry, the methods, methodology and the trustworthiness of the inquiry, and the issues related to the theoretical aspects of learning style in relation to deafblind learners are considered. Finally, and of key significance to me as a practitioner, the issues concerned with improving teaching and learning and the practice of education for children who are deafblind are highlighted.

### **9.2 The inquiry: methods and methodology**

This inquiry was concerned with very low incidence groups (deafblind children and teachers of deafblind children) and the child studies were based on individuals who present significant difficulties for researchers. Two questions were raised in relation to this:

- Is case study methodology appropriate for studying deafblind children as learners?
- How are the ethical issues appropriately resolved with this population?

Addressing these issues was a central concern in planning and executing the inquiry, and developing and identifying appropriate methods to explore the issues.

### **9.2.1 Choices of methodology and methods**

Children who are deafblind are an exceptional group. Because of the heterogeneity of the group it is not possible to compare deafblind children with each other. It is even difficult to compare children to themselves over time because often there are complicating situations which mean that the child's situation may be significantly different at a later date. Immediately before, shortly after or during the course of the research there were very substantial life changing events for five of the children involved, including major surgery and living abroad. Other children were not included in the inquiry because of sudden changes in their circumstances, in particular, serious illness. A flexible research approach (Robson 2002), as described in 1.5., in which information is gathered to explore issues and frame hypotheses for which supportive or contradictory evidence can then be sought was effective for this group. This framework supported the gradual development of methods for addressing the questions I had posed in relation to assessment and learning style.

Although there are very few deafblind children, relative to the general population, I was able to negotiate access to a sufficient number to provide initial evidence for the development of a theory and implications for practice relating to the concept of learning style. Data about these individuals provides detailed illustrations for the conclusions about learning style. Others may bring evidence that challenges my findings, and creates new theory (Swann 2003) but my methods have allowed this process to begin.

Children with both visual and hearing impairments are assumed to be psychologically interesting as a group, demonstrating unusual development which amongst other things highlights the process of typical development. However in fact, they are often more different from each other than alike. Individual case studies exemplify the points raised in this research, showing

that learning styles can exist in this population. The case studies presented here were never intended to suggest that there are certain typical learning styles in deafblind children. Rather the opposite, they show that this heterogeneous population also exhibits individual differences in learning style. The children are not in this way representative of the whole population of deafblind people. Given the exploratory nature of the research (Robson 2002) and the small scale of the project and the resources available, case study methodology proved to be both effective and reasonably efficient, not making exacting demands on the teachers and children, or my resources as the researcher. The research would benefit from being extended, firstly to include more examples of children for whom teaching and learning has been improved following learning style assessment. Subsequently it could include other groups of deafblind children, those with more skills, and those with fewer.

The participants in both the survey study and the child studies were not chosen to be representative of general populations, but were purposive, information-rich sources (Gall et al. 1996). Because there are so few deafblind children it was important that sources were found who could provide sufficient information based on knowledge and understanding of the issues. For both the survey and the case study, these sources were found and provided detailed evidence relating to the central concerns of the inquiry.

#### **9.2.1.1 Methods in the use of case study**

The child studies were exploratory in nature, and methods evolved and developed as the inquiry grew and changed. The assessment method used in the pilot study in phase one was not successful, and new methods were then required and developed through the inquiry to meet changing needs. As my understanding of methods and of the practical issues increased, I was able, in the phase three studies, to identify ways of gathering data concerning a wide range of aspects of style which I had not been able to do in the pilot study in phase one.



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The use of multiple sources of data in the phase three studies enabled the increased understanding of a range of aspects of learning style. The use of multiple sources provided illuminating information about individuals, some of which challenged teachers' assumptions. It added tested knowledge to the teacher's intuitive understanding. Although many teachers will have access to some multi-disciplinary discussion, there may be benefit in seeking perspectives outside the child's usual classroom contacts, to increase understanding and to limit over and underestimates of ability.

The case studies were instrumental (Stake 1995) and the issue on which they were focused was learning style. The methods developed give sufficiently detailed information in answer to the questions raised during the conduct of the inquiry, providing appropriate instruments for assessment, and the conclusions are appropriate for the level of security of the findings (Gorard 2002b).

In the phase three studies, two children (Shula and Fallon) had more functional skills and were developing more language than most of the children in phases one and two. The taught task assessment worked less well for these children, possibly because of their greater level of skills. They may have been less tolerant of the artificial teaching situation. The measured responses for them at the task of opening the box were less reliable. This may have been because the teachers and I could not devise sufficiently complex materials for them to work with, because they did not require the same levels of prompting and support as the less able pupils. Finding better ways to work with pupils like this is an issue for further investigation. It would certainly require some different strategies, possibly as simple as different tasks, but perhaps different approaches altogether, such as using their emerging cognitive and communication skills to recognise some of their own preferences.

Case study methodology has been valuable to the furtherance of this inquiry, as it was to Murdoch (2000), and McLinden (2000) in studying learners with multiple disability and sensory impairment. There is a clear need for more

evidence-based understanding of principles and issues in this field, (as discussed below), and case study is an effective and efficient means of collecting such evidence. This study provides a framework for seeking information which could be of value to other researchers.

## **9.2.2 The trustworthiness of the inquiry**

### **9.2.2.1 Credibility**

The studies identified factors in the learning of deafblind children which had not previously been overtly recognised. I have related these factors to what might be precursors of researched learning styles among the wider population, but this inquiry does not attempt to examine the issue of whether the aspects I have identified are *identical* with these researched styles. It shows instead that these aspects are relevant to improving teaching and learning for deafblind pupils. As discussed in chapter four:

the terms cognitive style and learning style have been much used by theorists, but what they mean still remains very much up to its author (*sic*)(Riding & Cheema 1991 p 194).

Following Riding and Cheema's proposition, then, these identified characteristics could be called learning style. I believe however, that further investigation is necessary.

### **9.2.2.2 Dependability**

The credibility of the survey is discussed in chapter three, and that of the child studies in chapter five. Here a particular issue which was raised during the inquiry is discussed in more detail.

Video was used as a measure of inter-rater reliability. The overall scores from this were good, with a match of 86% between the teacher and a second observer, using minimal training and a small number of records. However, there was one score of only 58%, for which all the disagreements related to visual prompts. Five of the eight disagreements across all the records were for visual prompts (62%). These disagreements may be related to the difficulties of recognising visual behaviours in children with cerebral visual

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impairment, as discussed in 5.3.2.1. Two records of Alice (see appendix five) possibly illustrate this difficulty, the observer perhaps not understanding Alice's visual behaviour:

<b>Prompt</b>	<b>Teacher</b>	<b>Observer</b>
visual attention	watching	?
visual attention	brief visual attention then taps sides	no attention

Others relate to more obviously observable behaviour. Two examples follow, one from Alice, one from Siobhan:

<b>Prompt</b>	<b>Teacher</b>	<b>Observer</b>
visual attention	no response	took when touched
visual gesture	retracted hand	no response

It seems that the difficulties with cerebral visual impairment are not sufficient of themselves to explain this discrepancy.

I expected more difficulty with matching records relating to tactual/kinaesthetic prompting, as discussed in 5.3.2.1., but in fact, only one of these records did not match. However, the uses of touch and of tactual prompting still require considerable investigation for this population, in particular to discover how children's preference for handling objects can be used to assist them in learning without external direction (this is discussed further below in 9.3.4.9.). Little is known about how to measure efficiency in tactual skills, or how tactual prompts themselves can be measured and faded. Despite an increased interest in the role of touch for learners with visual impairments (Roberts & Wing 2001, McLinden & McCall 2002, Chen et al. 2001, Hodges & McLinden 2004) more research is needed in this area, in particular for deafblind learners.

### **9.2.2.3 Generalisability**

As explained above, and in chapters three and five, the people in this inquiry are not intended to represent the rest of the population of deafblind learners and their teachers. The findings relate directly only to the individuals. However, the children do reflect part of the range of deafblind children, and the inquiry was intended to increase understanding of deafblind children, not

of typical psychology by examining extreme cases (Lewis & Collis 1997). The differences in learning style preferences in the child studies demonstrate that the findings are valid, not simply a result of the testing. The evidence shows that deafblind children can have learning styles, therefore it is a reasonable assumption that other deafblind children will also have learning styles, until further evidence shows that this is not so. For multiple case studies, as Farrenkopf et al. (1997) argue for single subject designs:

it is not the intent ..... to obtain results that can be generalised from a sample to a population. Instead, these designs allow researchers to evaluate, on an ongoing basis, the results of an intervention for individual participants (p 492).

This inquiry has outlined ways in which other teachers can examine their own practice and shown possible routes for improvement. These teachers will have to say whether efforts to do this for other children are worthwhile.

Areas requiring further research include how these findings should be extended to children who are more able, as described above, and to children who have fewer skills.

### **9.2.3 Ethical issues**

As described above in 5.4.2.1., children without formal language cannot be meaningfully be asked to give formal consent to taking part in research. Certain safeguards were put in place to protect children, such as avoiding people already under stress, withdrawing children who protested, and asking for parents' permission. However, this could not ensure children would have chosen to be involved. The best that can be said, perhaps, is that the research appeared to do no harm to the children and may have been useful to them as individuals, as well as possibly to the wider group of deafblind children, although they will not identify themselves as members of this group. Methods for obtaining consent or assent in learners with no formal language must continue to be sought by researchers working with this population. At present there remains a dilemma between allowing people who cannot give consent to take part in research, and excluding them from such research with any possible benefits because they cannot consent. For work which entails

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more risk for children, the idea of child advocates, who could research and then represent the child's interests should be further examined.

Because of the small population of deafblind children and researchers and teachers, there was a significant possibility that children and staff could be recognised by readers of the material, despite names having been changed. The compromise of using a single gender and of not linking individual children to certain syndromes for example, has meant that some aspects of the inquiry (for example, the effect of gender) may not be researched, but this limitation appears acceptable to attempt to preserve as far as possible the identities of those involved. Likewise, although the use of a snowball method for the survey meant that non-responders could not be followed up, respondents' identities remained confidential where they so chose. However these efforts at confidentiality have denied acknowledgement to those teachers who contributed to the research (Vaughn & Lyon 1994). The ethical resolution of these issues therefore remains a compromise, and I believe that it is likely that it will continue to be so for such research.

### **9.3 Learning style in deafblind children; a summary of the evidence**

The child based studies in relation to learning style aimed to answer the questions:

- Is the concept of learning style relevant to deafblind learners?
- If so, is it possible to assess learning style in this population?
- Can such an assessment be used to improve teaching and learning?

The evidence relating to learning style in relation to deafblind children is summarised below, and some relevant issues which arose in the inquiry relating to style, including factors which were not included in this inquiry, are discussed.

During the inquiry, I worked with fourteen deafblind children and their teachers. Through these studies I developed my understanding of the

learning style of these children. The findings of the pilot study suggested that learning style could be seen in deafblind children, but the methods used did not allow sufficient clarity. The development of methods for the exploratory studies showed that learning style in relation to prompt modality preference could be assessed in deafblind learners, somewhat independently from the teachers' perceptions. The phase two studies showed that assessed learning style preferences could lead to changes in teaching which improved pupils' learning in typical classroom situations. The phase three studies showed that other aspects of style were also relevant to deafblind children, could be assessed and could also contribute to improved teaching and learning.

### **9.3.1 Implications for teaching**

This inquiry has shown that individual deafblind children have unique profiles of learning style, and like other individuals demonstrate a wide range of individual differences. They do not and should not be assumed to share a general style because of the common impairment of deafblindness. Deafblind children will require individually tailored management of tasks and activities, with different presentations and in some cases, different learning experiences. Although this is already the case for most children with deafblindness, and individuality and heterogeneity of need are recognised in this population, learning style may be an insufficiently considered aspect of designing such programmes. Particular aspects of style are discussed below in 9.3.4.

Teachers may have to devise teaching programmes which make use of children's strengths and preferences. For children who prefer motion, teachers may find ways of learning perceptual, cognitive and communication skills while on the move, rather than necessarily assuming that sitting is a prerequisite for learning.

For other aspects of style, especially those where one dimension is less effective, such as lack of perseverance, teachers may wish to alter style through deliberate attempts. Approaches based on the ideas in Feuerstein's Instrumental Enrichment (Feuerstein et al. 1980) but developed for children with complex needs and communication difficulty might be appropriate.

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Exactly how this might be done requires further investigation. From a practical point of view, while initial teaching may be child centred, using the child's current preferences, the teacher may attempt to develop more effective styles, or versatility and the ability to choose approaches as suggested for more able individuals by Schmeck (1988c), Entwistle (1987), and Pask (1988), see above, 4.3.2. For example, while using objects to promote learning in self help and cognitive skills, a teacher may also devise an object based, rather than person based, interaction session (Watson & Knight 1991, Lee & MacWilliam 2002) to encourage more tolerance of people, or a teacher may accept multiple rapid repetitious actions such as stirring a cake while introducing other slower actions, such as spooning it into a container when it is finished. The interviews and written records showed that staff believed children's behaviours (which I have related to aspects of style) developed, and they sometimes tried to change them. One example of this is Siobhan:

*Siobhan shows little awareness of who is handling her. (review 89)*

*Siobhan has become more willing to let people into her world for play/cuddle/rough and tumble (review 93)*

*Siobhan has become increasingly aware and responsive to other people during the year. (review 98)*

and the following comment about Ruth:

*(staff are trying to develop Ruth's ability) to find copying a human more interesting than watching a ball run (Ruth interview).*

Teachers may also benefit from being made more aware of their own style, and how this affects the learning experiences of children. When one teacher was asked about her teaching style, the intervenor who worked in the class said:

*I could characterise her teaching style.*

Others in the classroom may show more insight into and awareness of teaching style than the teacher. Asking others about their teaching style may indeed be a valuable technique. At present, however, I think it unlikely that

teachers or others in the classroom understand the factors and variables that would be most helpful to comment on, or change. Further investigation into teaching style, (how to develop teaching style, how to match teaching style to children) would be likely to bring benefits for both teachers and learners.

### **9.3.2 The value of the concept of learning style**

The concept of learning style is complex and there is no agreement among researchers in this area as to exactly what it means. The rigid, testable, unchanging construct which is a 'fairly fixed characteristic' described, for example, by Riding et al. (1993) would probably be impossible to assess anyway in deafblind children, at least until EEG (electro encephalogram) or other direct brain measurement tools are available (Riding et al. 1993, Riding et al. 1997). Even then, unusual neurology is likely to affect any such measurement and make it unreliable. Although it may not be describing psychological constructs identical to those for typically developing individuals, the concept of learning style has proved valuable for demonstrating deafblind children's preferences in learning. This has led to increased effectiveness in learning. This assessment may be tapping the:

consistency in one's approach to attending, perceiving and thinking (Schmeck 1988a p 8).

Learning style assessment could lead to the development of profiles which describe individual patterns of learning for the benefit of new teachers or others involved with children (Babbage et al. 1999). However, the current emphasis on using assessment to report achievement means that new approaches would be required for passing on the valuable information about learning processes. When examining children's records for the phase three studies, it was noticeable that current records contained more targets and target achievement statements and fewer reports of the learning process. Unfortunately I did not record the numbers of these at the time. This may indicate that vital information about effective means of learning is not passed on, especially for children whose learning is minimal if measured by typical



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standards, and where that learning is not easily transferred from one situation or teacher to another.

In the current educational climate of inclusion, where more deafblind pupils without formal communication are placed either in generic special needs classes or in mainstream schools, and where increasing numbers of teaching assistants or sometimes intervenors work with them, assessment of learning style may be even more significant (Lidz 1992). Learning support assistants and intervenors are provided to support learning, while teachers decide on delivery of curriculum and targets. These professionals need to understand learning style more precisely, to be able to assess it, and adapt teaching and delivery to meet an individual's requirements. This could be significant in increasing successful learning for deafblind children.

This inquiry was limited in scope, and the aspects of learning style researched through the child studies may not be those most relevant to deafblind children. As far as I am aware, this inquiry is the first to explore the issue of learning style in deafblind children, and future studies may find other factors and aspects from the complex field of learning style which may be significant for learners at early developmental levels and with sensory impairments. A synthesis of styles, in a similar pattern to that of Riding and Rayner (1998) or Schmeck (1988b), which combines relevant factors into a compact description may ultimately be the most useful. The similarities between the aspects I have called 'people/object orientation', 'internal/external motivation' and 'prompt modality preference' and between 'novelty/familiarity' and 'context/out of context' and between 'small steps/whole task' and 'tempo of learning' have already been mentioned. Other aspects of style which may be even more important might include mobility, as described above. Some at least of the aspects discussed in this report are probably more transient and alterable, and more related to instructional preference than to possible physiological differences. They are probably most like the 'outside skin' of the 'onion' as described by Curry (1983). Reaching the outside skin may be the limit of what is currently measurable for this group, and this does not discredit the attempt. For the purposes of teachers of deafblind children it may not matter if these

are shallow layers. However, some aspects, in particular the difference between those who relate well to people and those who do not, may tap into deeper layers, that of cognitive personality style and be linked to brain structure and pathology.

### **9.3.3 Learning style terminology**

While during the course of this inquiry I developed a specific conceptualisation of learning style in relation to deafblind children, this is not, of course, widely shared and in fact, as discussed in 4.2., the term may have led to confusion. Because my own understanding of learning style continued to develop through the inquiry, perhaps I did not share this sufficiently with other teachers. At the conclusion of this inquiry, I believe that learning style relates to patterns of preference in learning, and that it is advantageous to pupil and teacher for these patterns to be explicit and identified for individuals independently of the teacher's perceptions as far as is possible. Deafblind children learn better when their preferences are used. Learning style preference is at least to some extent independent of severity of vision and hearing impairments. While some teachers appear to be aware of some of these factors, most are probably not. The results of this inquiry show that currently teachers of deafblind children in the UK do not know how to look at learning and how to decide the best methods for teaching tasks; similar conclusions were reached by the study carried out by Maxson et al. (1993) in the USA. Frequent assessment will be needed to ensure that learning styles do not equally become preconceptions not based on evidence. Although teachers may be willing to alter teaching to take account of learning style, the evidence from the survey and the child studies shows they may not understand enough, especially about the differences between teaching and learning style, to do this. The use of learning styles should perhaps feature in professional education in deafblindness in future.

#### **9.3.3.1 Assessment of learning style**

To be of value in improving teaching, learning style needs to be appropriately assessed. Paper and pencil tests (for example Riding & Rayner 1998), and

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activity tests, such as the toy/picture sorting tasks described by Kogan (1976), will not be appropriate for many deafblind children. Initially in this inquiry it was not clear what could be assessed or how to assess, and methods developed as my understanding increased and a theoretical framework was formed. With this increased understanding, I found that on meeting deafblind children I already knew as well as those I had not met before, I began to see, even in a short observation, indicators of learning style which I had investigated at more length in this inquiry. At present I cannot say if these judgements are valid. Further work is needed in developing an understanding of the behaviours which relate to learning style and how these could be assessed, to build up an assessment tool which is much simpler than my rather lengthy and cumbersome methods.

The survey showed that most teachers considered observation to be the most valuable method of assessment. An observation schedule, perhaps similar to the ACA (Coupe et al. 1985) or the Pragmatics Profile (Dewart & Summers 1988), might perhaps be suitable. It could include simple descriptors of extremes of styles and of relevant behaviours which might be shown. There is evidence both from my child studies and from others (Stubbings & Martin 1998 concerning learners with complex needs) that teachers do not always *know* as they may think they do, what learners actually know or are capable of. Two responses to the survey state:

*Most assessments confirm what we already suspected (Q 8 no 29)*

*The assessment told me nothing I didn't already know (Q 12 no 32).*

But teachers may be wrong about what they '*suspect*'. Some structure, to maintain independence from the teacher's perceptions would be an essential part of the assessment. There is little value in producing a document which is not sufficiently researched and in fact provides practitioners with a further hurdle and little useful information (Lenz & Deshler 1994). For example, it is not yet clear how much teachers would need to understand about learning style to carry out such an assessment effectively, or how they might reach this

understanding, and until this is overcome, the writing of an assessment document would be of little value.

There is also a need for teachers to consider how they could record assessment of learning process. While the current emphasis in record keeping is on achievement, important information about learning process may be being lost. The Russian methods of narrative recording (see 8.2.2.2.) may offer an additional, personal way of passing on effective information not only about children's achievements, nor about 'getting to know them' but about the ways in which they learn, possibly including pace, memory, and materials (as the Russian records did) as well as all the aspects of learning style mentioned below.

### **9.3.4 Aspects of style**

#### **9.3.4.1 Prompt modality preference**

Prompt modality preference was the major focus of the exploratory studies and the phase two studies. Prompt modality preference was chosen firstly because it is a very significant variable for the population of children with dual sensory impairments and secondly because it was relatively simple for teachers to control and alter this aspect of their teaching. There was also some evidence of difficulties with inappropriate prompting (Porter et al. 1997). Two of the fourteen children involved in the child based studies had almost no hearing or vision, but the others had at least some use of at least one distance sense. The evidence is that the children, as individuals, preferred different prompt modalities. In the following paragraphs I discuss issues in relation to prompting, and to the individual modality prompts.

##### **9.3.4.1.1 *The value of understanding prompt modality preference***

The child based studies show that deafblind children have individual preferences in relation to prompt modalities. Of nine records which provide sufficient information for interpretation, five children responded best to tactual/kinaesthetic prompts, three to auditory prompts and two to visual prompts (one child had two equal preferences). One teacher commented on

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the child's use of temperature and smell, and for one child, vibration was used. It is not clear how vibration might be used to encourage learning. It can attract and maintain attention, and it is difficult to see how it could provide detailed information at a simple cognitive level, and so lead on to a precise performance of a task. Prompt modality preference was not shared in spite of the common impairment of deafblindness, nor was it related only to the least impaired sense of the children. The inquiry casts doubt on the claim that for deafblind children:

the most efficient channels will be movement, touch, airflow vibration, smell and taste (Rødbroe & Souriau 1999 p 123).

At least some of the deafblind children studied have definite preferences for working in certain modalities, and this link appears not to be always linked with their impairments. Understanding prompt modality preference might be valuable in deciding, for example, on the most appropriate means for communication. For pupils preferring visual prompting, graphic or concrete symbols presented visually might be the best option, whereas pupils preferring tactual/kinaesthetic prompts, objects as cues or signs presented tactually might be best. For children who prefer auditory prompting, a wider range of sound cues than the speech which is predominantly used to structure communication might be the preferred option (see 9.3.4.1.3). The PVCS (Kiernan & Reid 1987) uses simple assessments of hearing and visual skills to inform assessment of communication and to suggest possible optimal communication methods. The assessment of prompt modality preference (which is not necessarily the same as the least impaired sense) may be a useful addition to such assessment. The use of the preferred prompt modality will also support all other types of learning, including self help and vocational skills, and might assist in making decisions about activities like partial integration, where for example, a child might be included in a session based on movement, or visual skills rather than music, depending on individual preference.

#### **9.3.4.1.2 Prompt modality preference and teachers' perceptions**

Children's preferences were not always related to their perceived level of impairment, although most often they were. Neither did the evidence from the taught task always match the teachers' impressions about the children's preferences. In the nine situations where there was sufficient information to make a judgement, on five occasions the teacher's opinion was different from that obtained from the taught task. Auditory prompts were reasonably successful for Caroline, although her teacher reported that she did not use her hearing. Grace rejected most tactual prompts, although her teachers thought her tactual senses were good. Debbie's teacher thought she did not like hand over hand working, but Debbie responded best to tactual/kinaesthetic prompts. Noluthando responded to auditory prompts, although her teacher thought she did not use her hearing. Fallon's teacher thought she used vision and hearing equally, but she responded much less well to auditory prompts. While the teachers' impressions (as might be expected) related to their perceptions of the levels of impairment of the senses, it may not always be the case that a child with a severe visual impairment and less severe auditory impairment will use the less impaired sense (Sacks 1998). The teachers may know their students well, but the situation is more complex than it appears. Learning style, separate from degree of impairment, appears indeed to be a significant factor in learner performance.

#### **9.3.4.1.3 Auditory prompts**

Prompts in different modalities are not equivalent. Tactual stimuli are not simply visual stimuli in a different medium, nor are auditory stimuli simply a different version of visual stimuli. To give an analogy, it is not simply the transcription of text into a different font, nor even a translation into a different language, but the difference in perception between Smetana's Vltava music and a picture of a rushing river. While visual and tactual prompts do not of themselves appear to require high order cognitive skills, in most cases, auditory skills usually require understanding of language, which has high cognitive demands. Of course, spoken language also has less demanding elements, such as tone and pitch, although these are less precise. Some

children may prefer auditory prompts and use hearing well, but do not understand language. For them, attention may be gained by auditory means, but no further detailed information can be given. Perhaps teachers of deafblind children have paid insufficient attention to how this might be used. The evidence for Debbie shows that she may have found language difficult. At attention level prompts, she used auditory information (33% response) but she responded poorly to auditory prompts at gesture or assistance level (both 25%). Five out of nine children found auditory prompts the least useful overall, which may also be related. But the numbers are very small and great caution should be exercised in interpreting them.

There may be better ways of using audition. Stubbings and Martin (1988) discussed a match to sample task for learners with severe disabilities and explained how they used different auditory qualities to judge auditory discrimination alongside words. In their work, the words 'red box' were said in a 'high pitched, rapid fashion' and 'yellow can' in a 'low pitched, drawn out fashion' (p 474). While I tried to ensure that in the taught task there was an enhanced auditory prompt for attention level and sometimes discussed with teachers what the next level prompt might be, for example, making a noise like that the object made when opening, this was not possible for all the objects. Teachers also seemed uncomfortable and some said that they would not wish to do this. An exploration of how to use sound, without language, with deafblind children might discover more about how this valuable teaching and learning resource could be better exploited. Further investigation and exploration of this area would be valuable.

#### **9.3.4.1.4 Use of tactual skills**

The use of manipulation as the main form of tactual prompt, which is almost of necessity invasive of a child's body (Nielsen 1996) may have been a significant factor which was not sufficiently differentiated by this inquiry. There are many aspects to the sense of touch (McLinden & McCall 2002). Some children, for example Grace and Shula, enjoyed manipulating objects and were described as '*twiddly*' but did not like tactual prompting. One child,

Noluthando, used an adult's hands as tools to begin tasks. At least one effect of this was that while she did this, the adult could not control her hands. As discussed above in 9.2.2.2. still not enough is known about tactual skills or the use of tactual prompting with this population. Further investigation might identify means by which a child's preference for handling objects can be used to assist her in learning without external direction and control from a teacher.

There was no measurement of the intensity of negative responses to prompts. In relation to tactual/kinaesthetic prompts in particular there were differences between children simply ignoring prompts, and those who actively resisted or pushed away help, perhaps finding it intrusive. Three records for Grace ('no response' 'push away' and 'cross') were all marked as negative prompts. Perhaps active resistance could attract a different type of comment to indicate it might be aversive to the child.

#### **9.3.4.1.5 Levels of prompts**

One of the children (Kate) gave no responses to any prompts at level three, assistance prompts, and at present it is unclear why this should be so. Caroline showed a diminishing response across the prompt levels, with 100% positive response at attention prompts, 75% at gesture prompts and 67% at assistance prompts, as did Debbie at a much lower and therefore less significant degree (69%, 67%, 60%). Helen showed an increasing response, 28% positive responses at attention level, 55% at gesture level and 60% at assistance level. Other children's levels showed more scatter. These responses to prompting may relate to children's attitudes to adults, as Kate, Debbie and Caroline were all primarily self motivated, although Kate and Caroline also liked adult attention. Helen was considered to require adult attention to learn. It is usually considered that pupils with greater levels of disability will require higher intensity prompts (that is, more assistance) at least initially, to learn. Helen had the lowest level of functional skills and perhaps found assistance the most valuable. This also reflects a Vygotskian idea (Vygotsky 1978) where assistance decreases as ability increases. But Kate also had few skills and a low level of functioning. The way in which the



prompt schedule for this task was organised assumed that attention was the most difficult prompt to respond to, gesture provided more help, and assistance the greatest amount of help. Perhaps Kate, Caroline and Debbie found such intervention unhelpful, and as the intervention level increased they became less interested. Once again, the assessment was not intended to measure this, and any interpretation must be treated with caution. It is however worth further investigation.

#### **9.3.4.2 Novelty/familiarity**

All the teachers said that children preferred familiar people or settings, but despite this there was evidence that at least six of the children also found novelty interesting and an effective route for learning. This is an especially important finding considering the value that has been placed on familiarity (for example, Blaha & Moss 1991, Moss & Hagood 1995, Hodges 2000, Rebecca Goodman Centre 1996). This prevailing opinion perhaps influenced the teachers in the child based studies to say that the children preferred familiar people or settings, because they did not expect to see anything else. In fact, Siobhan's teacher expressed great surprise that Siobhan enjoyed novel experiences:

*I'm gobsmacked that she got on so well with that chap (person she had just met), that's just so out of character for Siobhan (Siobhan interview).*

If teachers believe that novelty is not appropriate or efficient for deafblind children, those children may not be afforded sufficient opportunities to explore new situations. Lack of access to new settings, materials and people may both delay their development and consolidation of concepts, but also make their lives less interesting, perhaps encouraging more passivity and learned helplessness (McInnes 1999b). Some deafblind children may find novelty threatening and inhibiting, but this will not be the case for all. Even for those children who do find novelty motivating, *constant* novelty is unlikely to be attractive, and some stability will be needed. There is a need for further research to establish the effects of novelty and familiarity on learning.

#### **9.3.4.3 Person/object orientation**

There was a significant distinction between descriptions of children who were described as responsive to *people* and those described as being more responsive to *things*. Some children were not very interested in people, four being described as having autistic characteristics. Some teachers spoke at some length about how they were trying to develop communication skills in these children. Some have identified the development of communication as the most important goal of education (for example Geenens 1999, Miles & Riggio 1999, Rødbroe & Souriau 1999). But these studies provide evidence that some children may not be interested in people, and have a strong preference for object interaction. They may find communication so difficult that other skills should have priority. Self help, manipulation, vocational and mobility skills do not depend so heavily on communication. These may give children greater independence and more fulfilling experience of varied life than continually trying to teach them communication skills which they may remain unable to acquire (see also Rowland & Schweigert 2001). The development of communication must of course continue to be an important goal, but engagement with objects and activities of daily life may increase their quality of life, while also opening a possible route to communication (Meshcheryakov 1979).

#### **9.3.4.4 Internal/external motivation**

Motivation was linked to people/object orientation. Where information was available on both aspects, all those children who were not oriented towards people were also predominantly internally motivated. However, this evidence is influenced by the fact that almost no external rewards other than adult praise were seen to be offered, or were discussed in interviews or records. The reinforcement schedules which once dominated schools for children with learning difficulties were not seen. But some children, those who do not find adult praise or attention interesting or motivating, might find other forms of external motivation valuable. Micro-switch technology is one external reward which was observed. Other material rewards, such as the toys and objects used in the taught tasks might encourage more activity, exploration and

perhaps eventually completion of other tasks. Once again, those children who are not oriented towards adults may need more support than current practice affords them. Some children were, however, interested in adult praise (Usha and Shula), and others were making some progress towards this, for example Ruth, who was seen as sometimes '*proud*' of her work.

#### **9.3.4.5 Context/out of context**

Where any comments were made, context was seen as important - routine, consistency and security being mentioned by many teachers. Routine is also an accepted part of good practice in the education of children with deafblindness, (for example, Siegel Causey & Downing 1987, Blaha & Moss 1991) where it is considered partly to compensate for the lack of sensory information, and to support learning (Jacobsen et al. 1993). However, no teacher commented about children's ability to generalise and no situations in which children were asked to do this were observed. Therefore, although it appears that all the children may have preferred learning in context, there was no evidence of the opposite condition, so it is not clear that they learn better this way. It may be that children would benefit from more opportunities to put their learning into practice, and to be challenged, which might also help them to develop their learning style into one which would allow for learning in both types of situations (Schmeck 1988b).

#### **9.3.4.6 Confidence/lack of perseverance**

Few teachers commented on this aspect of style in interviews; there is evidence relating to only six of the children. Five of these were able to complete some small actions by themselves, but for some children these were very small sections of activities, such as Siobhan's ability to move from the base of her classroom chair onto the chair. The limit of the children's understanding of the tasks was probably a factor in this (see 9.3.4.8. below). Phoebe was described as becoming easily frustrated and turning to an adult for help if she did not succeed swiftly. Techniques such as backward chaining might encourage children to learn to finish tasks, encourage independence and reduce passivity. While persevering is the more valuable dimension, it

may be that teachers need to find ways to present tasks to children who do not have the confidence to see a task through, while continuing to teach and foster the skills of perseverance.

#### **9.3.4.7 Tempo of learning**

Some children made many repetitive movements in their attempts to complete tasks, and repetitive behaviours also had a fast pace. For other children, information was more confused. Ruth and Shula were both described as slow but both made several attempts to get things right. One child (Siobhan) worked very slowly with long gaps between attempts, although whether this related to thinking and reflection on activities to improve the next attempt cannot be known. Although reflective thinking is generally considered to be better (for example Sternberg 1997 and Feuerstein et al. 1979), at early stages of learning when possible outcomes are not understood multiple attempts may be valuable, so that something happens when the child acts. Whatever the value of these opposite positions, assessment of style could assist in making decisions about tasks and activities. One example could be the use of different switching regimes in micro-switch routines: learners with fast tempo of learning using latched devices while those with slow tempo might benefit from using timed switching (Ace Centre North 2000). Faster paced students might learn to feed themselves first, because it requires multiple spoon lifts, while those with slower style learn to drink from a cup first, because only one lift is necessary for a long drink.

#### **9.3.4.8 Small steps/whole task**

Those children who used repetitive movements often also used very small steps to work towards task completion. A difference was noticed in the observations in the phase three studies between the children who had more functional skills (were more able) and had more vision (Fallon, Ruth and Shula), and the children who appeared less able and had very poor vision (Siobhan and Kate). Fallon, Ruth and Shula all completed some tasks independently. Siobhan and Kate, who are functionally blind, had very few opportunities to be aware of complete tasks. Severe visual impairment and

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the inability to recognise whole tasks may be linked, although there is no direct evidence of this. When painting, for example, paint was put on Kate's hand and she was encouraged to place it on paper. She did not appear to have any comprehension of the whole task, the materials, or the paper. Siobhan was prompted to reach for things and to hold them, but almost as if they were out of context, so that she did not know she was holding a flannel to wipe her face. Although it is undoubtedly very difficult to provide a meaningful task description for a child who is blind and who does not have formal language, particularly in view of the difficulties with uses of auditory prompts as discussed above, the techniques used did not seem to be adequate. Other approaches might be, for example, through using the steps of co-activity as described by McInnes and Treffry (1982), and through using the sequence of getting out equipment, using it and putting it away (Hodges 2000, Blaha & Moss 1991) and ensuring an understanding of the materials and scope of the task (Miller & Hodges in press). In further, less formal observation which I have carried out in my professional capacity since these observations I have seen more evidence of the huge difficulty of presenting a whole task in a meaningful way to children who are blind and have minimal communication skills. Without understanding whole tasks, however, the world becomes fragmentary and random, comprehension incomplete (Hodges 2000) and learning difficult. Behavioural teaching techniques include physically prompting the whole activity, not only the steps being learnt (McKelvey et al. 1992) but this level of involvement may be perceived as force (Smith & Toy 1998), and resisted, as shown by the children who rejected tactual prompts, or may interfere with learning (Nielsen 1996, Lee & Macwilliam 2002; see also 6.3.1.1. and 9.3.4.1.4. above). This may also be a significant factor in the perceived increased learning difficulty and difficulty in communication in blind children with multiple difficulties (see Preisler 1995 in regard to communication). Children who had useful vision, although they may have used small steps, appeared to understand more about whole tasks and to complete them more often.

Not related to small steps/whole task but to another aspect of wholist/analyst style, van Dijk (1988) suggests that learners who process in a wholist way, which he considers to be based in the right brain, would most efficiently learn to use pictures or picture symbols as an alternative communication, while analytic learners, (based in the left brain) would more effectively learn through touch, a successive process, and so through object referents. At present there is no further evidence to support this. Learning style assessment might assist in making such a decision.

#### **9.3.4.9 Other areas which may be relevant to learning style**

Through analysis of the information on the five children in the phase three studies, and less extensive information on the nine children in the phase one and two studies, some other areas which may be relevant to further research in learning styles are proposed. These areas were not analysed, and it is not possible to say how significant they might be. They were all mentioned by teachers as areas relating to learning, and they may be relevant to learning style.

Four of the children, Caroline, Alice, Satya and Debbie were said to prefer moving around. Movement could be within tasks (Satya learning to deliver the register) or required frequently between tasks. Dunn et al. 1982, 1989, (cited in Jonassen & Grabowski, 1993) also use 'Mobility' as one of their areas for assessment, contrasting learners who need to move with those who need to sit still. This may be a significant individual difference in learning style for deafblind learners and could be included in further study.

Dunn et al. (1982 and 1989, both cited in Jonassen & Grabowski 1993) also mention preference for morning, afternoon and evening learning, and one of the children was described as:

*definitely an afternoon person (Usha interview).*

Two other areas mentioned by one or two teachers are discussed, because they might also be relevant to other children. One of these was a child's preference to be left alone to learn, to discover by themselves. This is similar to, and may be linked to, the people/object orientation and prompt modality

styles. Some children, despite their multiple difficulties, may find other people intrusive and would benefit from being provided with materials with which they can safely experiment (Nielsen 1996), reflecting a Piagetian model of learning (for example Small 1990). They might benefit more from no prompting at all than from an otherwise preferred prompt. There is no direct evidence relating to this from this inquiry, but it is possible that frequent intervention, which teachers consider they are paid to do, may hinder the learning of some children.

The child based studies did not examine the difference between learning from one stimulus at a time, for example either people or objects, visual or auditory prompts, and the use of multi-modal or multi-style prompts and teaching. Some children could use the most effective style from several presented simultaneously, or use all of them. As mentioned above in 6.3.1.1. some research evidence shows that single modality prompts may be preferred (Lane 1996, Bierdermann et al. 1994). However, preferring multiple or single inputs could be an aspect of learning style itself. It is also one which teachers can substantially alter if required, to improve teaching and learning. It could be especially significant for learners in educational institutions where what is frequently called total communication (interpreted as speech simultaneous with multiple forms of augmentative and alternative communication) is used. This may not be beneficial for students who can only attend to one thing at a time - those who, perhaps, are successive, rather than simultaneous, processors (Schmeck 1988b).

#### **9.4 Assessment and ability of deafblind children**

A further set of outcomes and discussion points relate to assessment and ability in deafblind children. The inquiry addressed the questions:

- What is known about the assessment of deafblind children?
- How valuable is such assessment, particularly in relation to improving teaching and learning?

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The text below summarises the main findings of the survey and the child studies in relation to these questions, and then discusses issues which were raised by investigating these questions.

The literature reviewed in chapter two shows that despite the many assessment tools and procedures for deafblind children, no single approach will be suitable for all. All assessments should be interpreted with great care and predicting or describing ability through assessments is usually inaccurate and unreliable. The survey presented in chapter three, which is possibly the most comprehensive investigation of assessment practice for deafblind learners in the UK, demonstrates that teachers do know and use some published assessment tools. However, they also felt such assessments were inadequate, and the evidence from the child based studies shows that teachers did not use such assessments frequently or to inform planning. Some teachers also appeared not to understand the abilities of their pupils (see 9.4.3 below).

### **9.4.1 Use of assessments for improving teaching and learning**

Most of the teachers who filled in the questionnaire said that they planned new teaching programmes on assessments (see 3.3.4). But most teachers in the child studies said they had not carried out an assessment recently. When teachers described their practice in the survey (see 3.3.4.1.), the primary reasons for their assessments were often related to statutory procedures or the teachers' own education. There remains some doubt about what practice in assessment actually is for teachers day to day and how such assessments are used for improving teaching and learning. Further research, possibly using diaries and other documents, would be valuable to help understand this issue and to use the possible benefits of assessment for teaching and learning.

### **9.4.2 Observation**

The evidence from the survey shows that teachers did not consider formal assessment tools to be very useful. Most teachers preferred to use informal observation methods. Only one teacher mentioned studying observation in a



teacher education programme. Neither of the MQ programmes mentioned observation as a major theme in learning about assessment. If teachers find observation the most valuable means of assessment and use it the most, there is perhaps insufficient emphasis on acquiring this skill. There are some useful texts in relation to children with complex needs for example Tilstone (1998a), and deafblindness Bryson (1993b) and Aitken (2000). The skills of observation are not necessarily easy to acquire, since they are more than simply 'watching children'. A concern remains that observation is not leading to sufficient rigour in assessment (as suggested by Rose & Agbenu 1998 for children with SEN in general) and teachers may not be recording and passing on the information thus gained. There is insufficient evidence in this inquiry to be sure of current practice by teachers. Further investigation, as described above in 9.4.1. might assist in understanding more about how teachers use observation, how they report it, and the effect this has on improving teaching and learning.

### **9.4.3 Understanding ability**

There is also some evidence from the inquiry that teachers do not have a clear understanding or common conceptualisation of issues relating to ability. For some pupils, teachers seemed to decide on little observable evidence that children were '*bright*'; '*intact on a cognitive level*'; '*very able*', or that their learning delay was entirely due to dual sensory impairment. All the children in the child based studies were functioning significantly below their chronological ages. These views may have led to high, or possibly unrealistic expectations of pupils, perhaps because teachers did not fully understand the effects of dual sensory impairment. They may not have met children who have impairments of vision and hearing but have developed more in line with their chronological age. Perhaps they did not understand what the children were capable of in comparison with others, for example, children with single sensory impairments, particularly where the deafblind child had good use of residual senses. Teachers who know children very well may over-interpret their ability to respond and understand, especially when those children are only able to give small physical demonstrations of ability (see 6.7.1.). Phoebe's teacher

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said that Phoebe could understand some fingerspelling (cognitively quite a complex process) although she could not give any supporting evidence of anything that Phoebe could do. My experience as a practitioner also is that teachers are not always able to describe how they know the child understands what they say she understands, and my suspicion is that often the child may not understand. As Grace's teacher said:

*it's getting harder ....to show it that she knows it, what you ask her to do ..... I call it the mother syndrome, without me saying, I know she can do it, I can see she knows, it's giving you that physical evidence that she can do it (Grace interview).*

Children's responses to familiar situations are sometimes considered to be a demonstration of understanding of the concepts involved in that situation.

Some teachers recognised a disparity between what children were capable of and what the initial perceptions of their capabilities were. Helen's teacher said:

*she is a happy lass and she will smile and she'll laugh, it gives the impression that perhaps there is more there than there is (Helen interview).*

Alice's teacher thought that Alice was in fact more able than she appears:

*I actually think she's got a lot more about her than perhaps on the surface appears... she'll do things that really surprise me sometimes (Alice interview).*

High expectations are considered to encourage achievement and low expectations can promote passivity. Underestimate of ability is an educational risk for the child, but overestimation of ability can also be damaging. The child may be continually involved in activities and experiences which she cannot yet comprehend. Anecdotally, I have seen a child who has no formal communication and functions at a pre-intentional level who carries two basketfuls of so-called objects of reference which are constantly placed into her hands, probably increasing her sense of random, meaningless activity. Overestimation in this way can cause withdrawal and passivity. It is perhaps relevant that some of the teachers seemed to find it hard to make a decision about a task which was achievable in a few days, although it must be said that

there were significant constraints on them, in particular that the teaching was unusual and artificial, and the task had to be devised within strict limits.

Stubbings and Martin (1998) found that teachers were not always able to predict learning outcomes accurately for people (with learning disability) they knew really well.

Perhaps these difficulties are linked to the fact that the teachers in the case studies used formal assessments rarely. Only one of the teachers had carried out a formal developmental assessment with any one of the 14 children in the case studies. It is true that literature shows that it is difficult to use formal assessments meaningfully with this population, and that they are not effective for assessing what might be called underlying ability or potential in a child with impairments which so fundamentally affect all aspects of development. But they might provide more information and understanding of developmental sequences and expectations. Teacher education in deafblindness may need to adapt to show how assessment techniques and procedures can be used to provide relevant and useful information about children, and in particular, to help to develop their learning. This is not an area which the inquiry set out to address, and the findings are tentative, but raise a concern which should perhaps be investigated further.

#### **9.4.4 Assessment of learning and learning style**

The questionnaire did not ask specifically about assessment through learning, and no respondent mentioned it, although it is probably a valuable technique for teachers of deafblind children (see 2.7.1.). However, those teachers carrying out observation were probably assessing through and within learning situations. Current educational demands which are focused on achievement may have obscured the value of assessment of the learning process for some teachers. The findings of this inquiry show that teachers' ability to assess the process, rather than the products, of learning (in particular, the understanding of learning style) is of benefit in improving teaching and learning, and thus increasing achievement.

Assessment of learning style may also provide a perspective on appropriate targets and learning programmes. For example, while assessments based on communication skill appear to provide evidence for ability, (Stillman & Battle 1978, Rebecca Goodman Curriculum 1996) children whose preferences are object rather than person oriented may not be given the opportunity to develop divergent developmental routes (Fox 1983). As shown above (9.3.4.3) they may learn self help tasks, and undertake vocational activities without having effective interaction. An assessment of learning style may help to make the choices clearer. Teachers will need to be given opportunities to learn how valuable this might be and how to do it.

## **9.5 Conclusions**

At the end of this inquiry and this report, there are some conclusions in response to the questions proposed at the outset.

Deafblind children do have learning styles, individual to them. I cannot relate these learning styles to the disparate variety of learning and cognitive styles described by other writers, nor do I believe it is necessary at this stage. The styles I have seen exhibit some consistency and integrity. These styles can be assessed, although the easiest methods may not yet have been found. The application of these styles to practice can improve teaching and learning for individuals.

This inquiry and the concept of learning style indicates that the current emphasis on the importance of routine, of small steps and familiarity, and on the overwhelming importance of communication skills may actually be obscuring the best learning opportunities for some deafblind pupils. Empirical evidence for these principles needs to be sought. Some children might benefit from a less rigidly structured experience with more novelty and wider experience of tasks.

Developmental assessment of deafblind children is difficult, and the interpretation of results is complex. The concept of intellectual potential may have little value for children with such serious impairments as combined deafness and visual impairment, and no assessment will be able to 'discover'

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or 'unveil' such potential. Teachers of deafblind learners do not find formal assessment of much value in providing information. However, assessment of *learning* may be able to provide the child with the best possible access to learning and develop her ability to learn and to increase her understanding and learning of skills. Such assessment should, on the basis of the foregoing, include assessment of learning styles.

There are important cautions about undertaking research work with people who are not able to give consent, and these should be taken very seriously by the researcher. However, since they will never be able to give formal consent, research which may be to their benefit is necessary, when carried out with appropriate care. Case study has provided a means of exploring a new concept, describing this concept in the cases of a few children, but showing it could be relevant to many more. Some description of how similar work could be carried out by others has been given. The developing field of the education of deafblind children in the UK needs a greater evidence based literature, and case study is a valuable way forward.

Some findings in relation to each of the questions asked at the beginning of the inquiry have been reached.

However, there are many issues requiring further research. Among these, the concept of learning styles is relatively new in relation to children with such severe disabilities and needs to be researched in other children. This should include deafblind children more able than those in this inquiry, and possibly those with fewer skills, although I am not at present able to suggest how this might be done. Which aspects of style are most relevant, and simpler methods for assessment of style are also topics which need more investigation. In relation to assessment, there is a need for more information about day to day work in classrooms, in particular about how teachers are using observation, and how teacher education could best support teachers to develop observation.

This inquiry has been both valuable and interesting to me as the researcher. I have learned a great deal about deafblindness, assessment, learning style

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and about research. I have developed my ability to learn and my ability to observe. I have changed the way I think about aspects of my work and the way in which I work.

What would the results of this inquiry mean for Peggy, mentioned in chapter one (1.2)? Peggy showed very few skills, and spent her time lying on a mat. When given objects, she did nothing and then threw them. She appeared to be of very low ability.

My initial opinion was that Peggy's potential would not have been realised by assessment. I now think that Peggy's potential might not have been formed, and that learning itself would be essential to allow Peggy to develop.

Assessing Peggy through her learning, even at an early level, could have improved the benefit of the teaching she received and thus her ability to respond, and allowed her to learn more, showing increasing ability. Learning style could have been a highly relevant factor in this learning, especially considering that it may be (though I have no evidence for this) that an inability to respond easily to people and communication caused her to be understimulated and to become passive.

Peggy is only one example. I hope and intend that the concept of learning style will be of increasing value, at least to the deafblind children with whom I work.

**APPENDIX 1**

**QUESTIONNAIRE AND COVERING LETTER**

Appendix 1 is a copy of the questionnaire and the letter that accompanied it. Letters varied very slightly according to which group they were sent out to. The questions are numbered on this copy for ease of reference but were not numbered in the original document.

Liz Hodges  
c/o School  
Road  
Town  
Postcode  
Tel. no  
*DATE*

Dear colleague,

I am writing to you today regarding a small research project I am engaged in as part of a study I am doing at Birmingham University. As you know, I am a qualified teacher of deafblind children, and I work at [NAME] school and as the advisory teacher for deafblind children in [COUNTY]. I am interested in gathering information about the assessment of deafblind students; what types of assessments are done and how useful they have been.

I have devised a short questionnaire about assessment which I am using to collect this information, and I am sending it to you, (as a member of the south east network group for teachers of deafblind students; as I am currently actively seeking information from those enrolled on diploma level courses in MSI throughout the country; etc). I am hoping that interested colleagues may be able to respond to my questionnaire, or pass it on.

If you have already filled one in, please accept my apologies for a further letter!

If you do currently teach or support students with dual sensory impairments or have recently done so, and therefore have some responsibility for assessment and follow up I would be very grateful if you would share this information with me. (For the working definition I am using of dual sensory impairments, please see the next page) However, I do understand if you feel you would rather not take part, and this is entirely up to you.

I am trying to gather information from a number of people working with deafblind students, (using a method called a snowball!). I have therefore enclosed a second copy of the questionnaire in a further envelope, which you could send or pass on to anyone else who might be prepared to fill it in. I will be delighted to supply you with further copies to pass on, or I will send them directly to them if you are able to give me an address. I will be very glad to reach people outside the south east.

I am primarily asking for the views of teachers, who are usually responsible for carrying out assessments and interpreting the results. However, if other classroom staff (intervenors, learning support assistants, other specialist



## Appendix one

workers) do have a significant role in this type of work with students with dual sensory impairments, and they are willing to fill in the questionnaire, I would be very glad to hear from them.

If you would prefer to make further copies yourself, (for example for use in one establishment,) please do.

It would help me greatly if you will allow me to know your name and the place you work – but there will be no identification of people or schools and services published – this information will be seen only by the two or three people involved in the project, to discuss the spread of responses. If you would like to take part, but feel that you cannot give your name, I would still like to hear from you. If you would like information about the results of the study, please indicate this on the form – there is a space for you to do this towards the end. The completion of this questionnaire is entirely voluntary, and please be assured that your response to it will have no effect on work I am or have been doing with you.

I enclose a brief outline of the project I am involved in.

I will be very happy to discuss this questionnaire and this project with you further, if you would like to phone or write to me at the address above.

Thank you for reading this letter, and for any help you may be able to give me.

Please return this questionnaire by *DATE*.

Yours sincerely,

Liz Hodges

### Definition of deafblindness used for this study

A student who is deafblind has some impairment of both vision and hearing senses, whether organic or perceptual in nature, the combination of which produces significant difficulties beyond those which would ordinarily be expected to result from a single sensory impairment. Few deafblind students are totally deaf and blind, most have some residual hearing and/or residual vision. Deafblindness may be congenital, or the result of illness or accident. It may also be a significant aspect of multiple disability.

Students who display visual and auditory responses which are at a lower level than response to other stimuli, (tactual, olfactory, proprioceptive) are included in the population of deafblind students.

## Filling in the form

Thank you for getting this far! The questionnaire looks long, but many of the questions are very simple, requiring only a tick in a box, or sentence answer. There are also some longer spaces when you are asked for your own opinion. If there is not enough space, please continue on the back of a sheet, or on a new sheet. Any further information you want to give will be useful, I would be very glad to know what you think.

You may also feel that you cannot answer all the questions, or complete the questionnaire. **ANY** information you give will be helpful to me, and I would be very glad to have it back even if it is not finished.

The questionnaire is intended to be fairly simple to fill in. The first two pages ask questions about the place you work, your role, and the training you have had. The next 2 pages ask about the type of assessments you have used recently. I recognise that you may not remember all the details. If for example you can't remember what the assessment was called, please give what information you can about it, (e.g. the author, the place it came from if this is relevant, the name it is commonly called). If you are able to look up documents to remind you, this will obviously be helpful to me.

The next 2 pages are about what **you** think about assessment, and how you use it in your classroom or your work, and what happens to assessment information.

The last page asks you to describe, if you can, a particular assessment you have carried out. It does not need to be in great detail.

Please note that the questionnaire refers to assessments **OTHER** than of hearing or vision. This is because there is already some literature about visual and hearing assessment, and I am hoping to discover more about more general uses of assessment, and whether there is a pattern of use.

I don't need to know children's names when you are filling in the questionnaire. A pseudonym or initial will be fine if you are writing about what you did with an individual.

**Please ask for another copy of the questionnaire if you can use it – I will supply more if you can use them!**

**Please return the questionnaire by *DATE***

## Assessment of deafblind students

### Your role and work

**Would you describe your establishment or your work as; (Q1)**

Please tick or write in

School for pupils with visual impairment		Other type of school (can you describe?)	
School for pupils with physical impairment		Advisory or support service (can you describe?)	
School for pupils with hearing impairment		Other type of school or service (can you describe?)	
School for pupils with severe learning difficulties		Further education establishment	
Other comments			

**How would you describe your role? (Q2)**

Please tick or write in

Qualified teacher	
Other role (please describe)	e.g. intervenor, instructor

**How many dual sensory impaired students; (Q3)**

Please write in

do you currently teach/support ?	
have you taught/supported in the last two years? (not counting those mentioned already)	

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### Do you hold or are you studying for a specialist teaching qualification relating to special educational needs? (Q4)

Please tick, or write in name of award, or say you are still studying, and give a (rough) date when you obtained it.

		Date (write in)	more than 5 years ago (tick)
Advanced diploma and mandatory qualification for children with MSI			
Specialist qualification in VI or HI	(which?)		
Other Specialist course (please say what course and in what specialism)	e.g. Advanced diploma in SLD, Educational psychology		

### Other training (Q5)

Please write in

Have you had any other specialist training for teaching students with deafblindness? Please describe, briefly.	Short course, 2-5 days, Long course 10+ days e.g. Awareness course – one day; Course on assessment, included half day on deafblindness
---	--

If you have had specialist training in deafblindness, please mention if you remember the inclusion of any topics on assessment or learning style (Q6)

Please write in

	Mention any specific topics – e.g. assessment of mobility, learning of visually impaired children. Give any relevant detail
Assessment – <b>other than of vision or hearing</b>	
Learning style/strategies	

**Assessments of deafblind students (Q7)**

If you have used any of the following types of assessment **in the last two years**, please give a brief description of that type in the box with an instance, and a date, and a brief description of the child, e.g. approx. age and degree of hearing/vision.

**Please DO NOT include assessments of hearing or vision.**

You do not need to write in every box, but please write in every relevant one. Also any information you give is helpful!

**Formal published schedule (please say which one)**

e.g. I assessed J. on SATs in English in 1998 using signs rather than speech.

**School or other local assessment schedule (please say which one)**

e.g. Before her annual review I used the school's swimming achievement programme to see what targets I should set next in science for K.

**Observation without specific schedule**

e.g. J. came into my class in 1997 and I spent five weeks working on typical classroom activities with him to see what kinds of things he was interested in, and how he reacted to people. At the end of the five weeks I filled in the sections of his statement advice regarding his needs.

**Other**

e.g. The educational psychologist set up a specific situation to test K.'s understanding of number and maths and of the language associated with it, to see whether her language difficulties were holding up her understanding.

**Have you found these assessments useful?**

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The following assessments have all been designed for or used with deafblind students. Please indicate which ones you know, where you learnt about them, whether you have used them, and whether you consider them useful. **(Q8)**

	Know of this	Where I learnt about it -e.g. course, colleague, school	I have used this	I have found this useful (please comment on how and why).
<b>EXAMPLE</b> Hodges visual matching test	yes	on course in 1994	yes once	not very useful for pupils with no vision
Affective Communication Assessment <i>Coupe Barton et al.</i>				
Pre-verbal Communication Schedule <i>Kiernan and Reid</i>				
Callier Azusa Scale (H) communication <i>Stillman and Battle</i>				
Callier Azusa scale (G) <i>Stillman</i>				
Rudolph Collins scale <i>Rudolph and Collins</i>				
McInnes and Treffry assessment <i>McInnes and Treffry</i>				
Nielsen functional and assessment scheme <i>Nielsen</i>				
Behaviour assessment battery <i>Kiernan and Jones</i>				
Progress guide for deafblind and severely handicapped children <i>Dale</i>				
The object related assessment procedure <i>Coupe and Levy</i>				

## Appendix one

What do you consider to be the aims of the assessments you carry out for deafblind students? **(Q9)**

Please tick all of those you think are significant.

Then write the number one next to the item you consider the most important, two by the second, and three by the third, so showing your first three priorities.

Tick	Item	Number
	to inform parents	
	to compare students to achievements/standards of children without disabilities	
	to purchase appropriate equipment for children	
	to predict future achievement	
	to design new programme	
	to inform other professionals	
	it is a requirement of school/establishment	
	to set targets	
	to discover student's potential	
	to decide on placement for student	
	to solve problems (behaviour etc.)	
	to measure achievement	
	to organise classroom environments for students	
	Other – please write in	
	Other – please write in	
	Other – please write in	

Which of the following are important in setting annual targets? **(Q10)**

Then write the number one next to the item you consider the most important, two by the second, and three by the third, so showing your first three priorities

	Number
the requirements of a curriculum, such as the national or school curriculum	
the results of an assessment I carry out before setting targets	
what the pupil's parents want her to do	
a developmental progression, carrying on from what she did before	
what I know about what the pupil did last year	
other – please describe	
other – please describe	
other – please describe	

## Appendix one

What happens to information gathered at an assessment and who is informed? Please describe some ways in which you might use the results of assessments (**not of vision and hearing**). It may help to give an example of the type of assessment you meant first. **(Q11)**

Please write in

e.g. Communication assessment; - it goes to a central file,  
Statutory assessment for statement; - I use it to help decide on a school placement

Have you ever made an assessment of a deafblind student's learning style (other than as part of one of my studies!) If so, please describe what you did.

**(Q12)**

Please write in



## Appendix one

Could you describe the most recent occasion you remember on which you undertook an assessment, **other than of vision or hearing** (it can be more than 2 years ago). Please mention the date (roughly) the type of assessment, the reason for the assessment, who was involved, the results of the assessment, and what was done as a result of the assessment. Please mention how valuable you considered it. Do give as much detail as you like/can, but it is fine if it is short like the example. **(Q13)**

Please write in

e.g. H. was assessed by the PCVS with the speech therapist and the teacher and the intervenor, because she seemed to be making so little progress in communication. Parents were keen that this happened too, as they had been expecting she would have a wide sign vocabulary after a little while at school. The assessment showed that she was not able to imitate motor movements, and she did not appear to be recognising signs at all, although she understood some gestures. Following the assessment her review conference mentioned her difficulties in imitation as the reason why she had not made much progress, so that everyone was clear. This was all done 3 years ago in 1996. I think the assessment helped me work out what I thought about this.

**You do not have to give name and address information**, and if you would rather not, I will still be very grateful to receive your questionnaire.

If you would be able to give your name and address, and if you would like to receive an interim analysis, please write in;

Name	Do you want to receive an interim analysis?
	<b>YES</b> <b>NO</b>
School/Service address	

## **APPENDIX 2**

### **ASSESSMENTS MENTIONED BY RESPONDENTS TO THE QUESTIONNAIRE**

This appendix lists all the assessments which were named by respondents in the questionnaire, other than the ten already referred to. They are listed by the name of the assessment, not of the author. Where I have been able to trace them, references are given. However, respondents may have been using different editions or materials from those specified. Those I have not been able to trace may be locally published.

#### **Assessing Communication Together**

*Bradley H* (1991) Penarth; Mental Handicap Nurses Association.

#### **Baseline assessment**

This could relate to a number of different such assessments and no one is specified here.

#### **Berewecke Assessment Schedule**

One copy of this is held by the Occupational Therapy School at Exeter University – I have not been able to obtain a full reference. I have however previously seen what I believe is this assessment and it relates to social and independent living skills.

#### **Braille readiness scale,**

This is probably a general description but could have referred to:

*Mangold S* (1997) The Mangold Developmental programme of tactile perception and braille letter recognition Castro Valley CA: Exceptional teaching aids

#### **CARS (Child Autism Rating Scale)**

*Schopler E Reichler R & Renner B* (1993) Los Angeles: Western Psychological Services

#### **Checklist of Communication Competencies The Triple C**

*Bloomberg K & West D* (1999) The Triple C Checklist of Communication Competencies -- Assessment Manual and Checklist. Melbourne, SCIOP.

### **Cochlear Implant Assessment**

Again this is probably a general description. Different implant centres carry out different assessments which usually include language, hearing and cognitive functions.

### **Effective Behaviour Support**

(Pennsylvania Department of Education, Bureau of Special Education, 1995)

### **Equals**

(presumably):

*Ayres J & Thomson M (2002) P scale assessment of the national curriculum PACE Tyne and Wear; EQUALS*

### **GCSE**

General Certificates in Secondary Education are a UK wide standardised test typically taken at 16 yrs old and administered by a variety of examination boards.

### **Insite Developmental checklist**

*Clark T Morgan E Wilson-Vlotman A (1983) The Insite model A parent centred, in home Sensory intervention, training and educational program Vol. IV Developmental Skills Manual Utah; Project Insite*

### **Kidderminster**

*Jones L (1989) The Kidderminster curriculum for children and adults with profound and multiple learning difficulties Assessment checklist Birmingham; University of Birmingham.*

### **Living Language**

*Locke A (1985) Living Language Windsor; NFER-Nelson*

### **Lockou scales**

( I was unable to trace this, but it may be a misreading of Locke Scales, see Living Language above)

### **Margaret Tait video analysis**

*Tait M (1987). Video Analysis Journal of the British Association of Teachers of the Deaf (11) 5*

### **Mary Sheridan**

*Sheridan M (1973) Children's developmental progress Slough; NFER*

## **MOVE**

*Blanton K F* (1990). M.O.V.E.: Mobility Opportunities Via Education.  
Bakersfield, CA: Kern County Superintendent of Schools.

## **Oregon,**

*Andersen S Boignon S Davis K* (1991) OR project; the Oregon project for visually impaired and blind preschool children fifth edition Oregon; Jackson Education Service District.

## **Portage**

There are several examples of this, one of which is

*White M. & Cameron R* (1987) Portage Early Education programme: a practical manual Windsor; NFER-Nelson

## **Positive Environment Assessment,**

This is included in

*Albin R, Horner R & O'Neill R* (1994). Proactive behavioral support: Structuring and assessing environments Eugene, OR: Research and Training Center on Positive Behavioral Support, Specialized Training Program, University of Oregon.

## **Pragmatics profile,**

*Dewart H & Summers S* (1988) The pragmatics profile of early communication skills Windsor: NFER Nelson

## **QCA/P scales**

*QCA/DfEE* (2001) (Revised edition) Supporting the target setting process; Guidance for effective target setting for pupils with special educational needs DfES: Annersley

## **Reynell Zinkin scales,**

*Reynell J* (1979) Manual for the Reynell Zinkin scales for young visually handicapped children Windsor: NFER-Nelson

## **SATs**

Standard Attainment Tasks (SATs) are national standardised tests delivered to children at the end of each key stage of compulsory schooling in the UK.

## Appendix two

### **Semantic-pragmatic scale,**

probably

*Firth C* (1999) *Semantic-pragmatic Language Disorder* Bicester: Winslow Press (includes checklists)

### **STAR**

I was unable to trace this assessment.

### **Teaching talking**

(An internet search suggests this may be by Locke, A and be a test of adult and adolescent language )

*Locke A & Beech M* (1991) *Teaching Talking* Windsor: NFER-Nelson

### **TROG**

*Bishop D* (2003) *Test for reception of grammar* London: Psychological corporation (first published 1983 and revised 1989)

### **Vision for doing**

*Aitken S & Buultjens M* (1992) *Vision for doing* Edinburgh: Moray House Press

### **APPENDIX 3**

#### **COMMENTS MADE ABOUT LEARNING STYLES TRAINING.**

The following were all the comments made about training for learning styles

- ◆ how deafblindness affects early development, sensory, communication, motor and interaction with carer/parent
- ◆ use of sensory rooms
- ◆ vaguely
- ◆ specific use of multisensory environments
- ◆ use of objects of reference, intensive interaction, creating a reactive environment, communication through symbols or signs.
- ◆ intensive interaction related to stages of interaction, co-active working, use of sensory environs
- ◆ intensive interaction starting with working with child informally and using this strategy to learn from the child how to progress. Building on what child already knows – scaffolding etc.
- ◆ literacy and numeracy for PMLD Flo Longhorn
- ◆ very little
- ◆ following Dutch and Canadian model
- ◆ topic on assessment strategies for use in classroom
- ◆ van Dijk
- ◆ Sherborne movement, intensive interaction
- ◆ mobility, communication, using massage touch etc.
- ◆ intensive interaction
- ◆ learning styles/strategies as discussed by van Dijk, McInnes and Treffy, L Nielsen and lectures based on these
- ◆ structured teaching communication, backward/forward chaining, interactive approaches
- ◆ included implicitly in most of course materials
- ◆ video, didactic, modelling, shadowing, written materials

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- ◆ total communication, use of all residual senses, and specific sensory training, objects of reference
- ◆ theoretical- practical
- ◆ bonding and attachment theory modelling, co-active working a approach, proximity, pupil led programme design and choices, routine mismatch sequences
- ◆ scheduling and predictability
- ◆ support to the education of learners. Implications of DB VI and HI on learning and mobility
- ◆ learning styles and teaching styles and learning skills.

## **APPENDIX 4**

### **LIST OF COMMENTS ABOUT LEARNING STYLE ASSESSMENTS**

- ◆ Part of ongoing procedure, how child responds, what works and Why! Eg. Good working position, preferences, ways of communication, physical environment, handling
- ◆ Assessments made of responses to 'familiar' activities their roles and responses (body/limb movements, anticipation, anxiety) challenging perceived (by staff) understanding of students learning and difficulties by looking for proof in students actions, Offering students new, different or challenging situations to see how they respond.
- ◆ Continual assessment, discuss it with all relevant staff and ensure all staff use same learning styles
- ◆ Not with a pre-written assessment, but preferred learning style is assessed by trying many different approaches, styles and methods of teaching, using different types of communication to find out which is preferred or motivating.
- ◆ As part of ongoing work with each child, looking at what works best, eg. Light levels, auditory environment, seating and positioning, communication methods, handling, etc.
- ◆ Ongoing observations provide knowledge of a framework of 'how' the child learns best I.e. within a tight structure using a lot of symbol cues, - activity based within a practical/ functional setting vs. a 'table top' teaching style/approach
- ◆ Not specifically although I would comment on apparent learning strategies being used and comment on possible appropriate ways to facilitate this.
- ◆ When AW first attended school and his dual sensory impairment was realised we set about finding out how best he learned. He prefers a tactual approach, finger spelling and hand over hand signing. Combined with this he uses objects to let him know what is going to happen next. Despite a severe hearing loss he has learned to develop his vocalisations aurally and now uses his aided hearing to access information and be part of the group.



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- ◆ Tried various types of style for reading assessment. The child, (age 6) has a very individual style and as a result is making good progress
- ◆ Not specifically. An assessment has been made up of all areas of a child's development through the use of observation and video material.
- ◆ I videoed a child to observe how he responded to visual and auditory stimuli and how he was exploring/playing with his toys
- ◆ Not sure what is required. As far as I'm concerned, do this most of the time in homes, schools, nursery, respite etc.
- ◆ As part of my course I attempted to assess a child's communication attempts through gesture/sign and measure them against his cognitive abilities to try and investigate why he seemed to possess the necessary cognitive pre-requisites for communication but hadn't learned to communicate.
- ◆ If you mean strategies and methods, yes. Tactile defensive, I or R dominance, visual/perception preference, auditory awareness et to make a learning package accessible to student
- ◆ Always. In context of various real activities, and with emphasis on interactive behaviours seeking to establish a composite picture of preferences, perceptual awareness and skills, responsiveness, range and contexts of positive and negative behaviours, evidence of recognition, evidence of emotional state, whether context bound or not, recognition that learning style might vary according to place, time, activity, person who is working with child, emotional and physical state at the time.
- ◆ I have used video to observe pupils 'doing their own thing' the most useful tool I've found for gaining insight into learning style
- ◆ 'Not specifically' - but this would come out in some assessments, eg. TROG receptive vocabulary shows if child understands what is being said and the extent to which that child uses receptive language to learn
- ◆ Yes, although what is meant by learning style is open to several interpretations, eg. Entwistle, Rowland and Schwiegert. Engineer specific situations such as making a sandwich.

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- ◆ Only in terms of how they respond to their environment which settings increase/decrease learning - eg. Observation of student's behaviour during quiet/noisy sessions
- ◆ Using observation, video analysis, discussion with colleagues, then using the information gathered from above to inform future planning
- ◆ By daily 1:1 work and ongoing observation adapted teaching strategies to meet the fluctuations in the pupil's preferred/accessible learning routes No one 'learning style' apparent
- ◆ Observation only of PMLD pupil with complex VI and fluctuating HI. Watched how he used his hands to collect information about place, context and activities, and communication signals using his hands.
- ◆ Observed reactions (physical, breathing etc.) throughout a day and charted to describe abilities in a pupil who had been described as unresponsive
- ◆ Only by observing how pupils approach a new task, eg. Do they use visual/tactile etc. methods to explore the task. Looking at the sort of search techniques the children use
- ◆ Through observations/ interactions with pupil when trying to establish a relationship. Without any structure, I wasted time and felt I was not gaining specific info - as to how to proceed in future
- ◆ Used drawings to plan lessons with the client. He was reluctant to work in the gym on improving movement skills, but enjoyed drawing the activity then participating. He eventually drew what he wanted to do firstly from a menu and then without needing the menu to guide his choice. Conventional signs and gestures were dismissed and participation reluctant. I suggested that pictures/drawing were a preferred method of communication.
- ◆ Part of ongoing procedure, how child responds, what works and Why! Eg. Good working position, preferences, ways of communication, physical environment, handling
- ◆ Assessments made of responses to 'familiar' activities their roles and responses (body/limb movements, anticipation, anxiety) challenging perceived (by staff) understanding of students learning and difficulties by looking for

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proof in students actions, Offering students new, different or challenging situations to see how they respond.

- ◆ Continual assessment, discuss it with all relevant staff and ensure all staff use same learning styles
- ◆ Not with a pre-written assessment, but preferred learning style is assessed by trying many different approaches, styles and methods of teaching, using different types of communication to find out which is preferred or motivating.
- ◆ As part of ongoing work with each child, looking at what works best, eg. Light levels, auditory environment, seating and positioning, communication methods, handling, etc.
- ◆ Ongoing observations provide knowledge of a framework of 'how' the child learns best I.e. within a tight structure using a lot of symbol cues, - activity based within a practical/ functional setting vs. a 'table top' teaching style/approach
- ◆ Not specifically although I would comment on apparent learning strategies being used and comment on possible appropriate ways to facilitate this.
- ◆ When AW first attended school and his dual sensory impairment was realised we set about finding out how best he learned. He prefers a tactual approach, finger spelling and hand over hand signing. Combined with this he uses objects to let him know what is going to happen next. Despite a severe hearing loss he has learned to develop his vocalisations aurally and now uses his aided hearing to access information and be part of the group.
- ◆ Tried various types of style for reading assessment. The child, (age 6) has a very individual style and as a result is making good progress
- ◆ Not specifically. An assessment has been made up of all areas of a child's development through the use of observation and video material.
- ◆ I videoed a child to observe how he responded to visual and auditory stimuli and how he was exploring/playing with his toys
- ◆ Not sure what is required. As far as I'm concerned, do this most of the time in homes, schools, nursery, respite etc.
- ◆ As part of my course I attempted to assess a child's communication attempts through gesture/sign and measure them against his cognitive

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abilities to try and investigate why he seemed to possess the necessary cognitive pre-requisites for communication but hadn't learned to communicate.

- ◆ If you mean strategies and methods, yes. Tactile defensive, I or R dominance, visual/perception preference, auditory awareness et to make a learning package accessible to student
- ◆ Always. In context of various real activities, and with emphasis on interactive behaviours seeking to establish a composite picture of preferences, perceptual awareness and skills, responsiveness, range and contexts of positive and negative behaviours, evidence of recognition, evidence of emotional state, whether context bound or not, recognition that learning style might vary according to place, time, activity, person who is working with child, emotional and physical state at the time.
- ◆ I have used video to observe pupils 'doing their own thing' the most useful tool I've found for gaining insight into learning style
- ◆ 'Not specifically' - but this would come out in some assessments, eg. TROG receptive vocabulary shows if child understands what is being said and the extent to which that child uses receptive language to learn
- ◆ Yes, although what is meant by learning style is open to several interpretations, eg. Entwistle, Rowland and Schwiegert. Engineer specific situations such as making a sandwich. SA)
- ◆ Only in terms of how they respond to their environment which settings increase/decrease learning - eg. Observation of student's behaviour during quiet/noisy sessions
- ◆ Using observation, video analysis, discussion with colleagues, then using the information gathered from above to inform future planning
- ◆ By daily 1:1 work and ongoing observation adapted teaching strategies to meet the fluctuations in the pupil's preferred/accessible learning routes No one 'learning style' apparent
- ◆ Observation only of PMLD pupil with complex VI and fluctuating HI. Watched how he used his hands to collect information about place, context and activities, and communication signals using his hands.

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- ◆ Observed reactions (physical, breathing etc.) throughout a day and charted to describe abilities in a pupil who had been described as unresponsive
- ◆ Only by observing how pupils approach a new task, eg. Do they use visual/tactile etc. methods to explore the task. Looking at the sort of search techniques the children use
- ◆ Through observations/ interactions with pupil when trying to establish a relationship. Without any structure, I wasted time and felt I was not gaining specific info - as to how to proceed in future
- ◆ Used drawings to plan lessons with the client. He was reluctant to work in the gym on improving movement skills, but enjoyed drawing the activity then participating. He eventually drew what he wanted to do firstly from a menu and then without needing the menu to guide his choice. Conventional signs and gestures were dismissed and participation reluctant. I suggested that pictures/drawing were a preferred method of communication.

**APPENDIX 5****INTER-OBSERVER RELIABILITY MEASURES FROM VIDEO MONITORING****Siobhan (video of classroom observation).**

The observers were looking for modality prompts in a twenty minute section of the tape.

	First observer	Second observer
Tactual prompts	33	36
Responses to tactual prompts	1	0
Kinaesthetic prompts	21	20
Responses to kinaesthetic prompts	4	5
Vibratory prompts	18	19
Responses to vibratory prompts	0	0
Olfactory prompts	1	3
Responses to olfactory prompts	0	0
Auditory prompts	1	0
Responses to auditory prompts	0	0

80% of the categories fall within 1 event of each other, the other 20% are two or three events different.

***Inter-observer reliabilities of taught task.***

Key words are used from some the teachers' narrative descriptions.

**Usha (video of taught task compared with teacher's record)**

	Prompt	Teacher	2 <sup>nd</sup> observer	3 <sup>rd</sup> observer	Rater
1.	Initial	Followed with eyes	looks	looks	Yes
2.	visual attention	Looked, didn't touch continued vocalising	looks	looks	Yes
3.	tactual/kinaesthetic attention	Pulled hands away	looks	looks	No
4.	Auditory attention	Looked and hit left stick	touches	pushes lever	Yes
5.	tactual/kinaesthetic gesture	Looked, pulled hand away	pulls away	pulls away	Yes
6.	<i>repeat of above</i>	Pulled away	pulls away	pulls away	Yes
7.	auditory gesture	Looked	touches box	no response	No
8.	visual gesture	Reached, touched box	touches box	(no record)	Yes
9.	auditory model	Tapped box 3 times	touches top of box	touches box	Yes
10.	visual model	Looked, pulled scarf	looks inside	looks	Yes
11.	tactual/kinaesthetic model	Knocked off lid	pulled off lid	interested, assists	Yes

Key words only of the teacher's descriptive records are used

The records show an 82% match.

**Helen (video of taught task compared with teacher's record)**

	Prompt	teacher	observer	match
1.	tactual/kinaesthetic attention	no response	banging tray	Yes
2.	visual attention	no response	bangs tray	Yes
3.	auditory attention	random hit	touches skin (tambourine)	Yes
4.	tactual/kinaesthetic gesture	no response	no response	Yes
5.	visual gesture	no response	no response	Yes
6.	auditory gesture	no response	no response	Yes
7.	tactual/kinaesthetic model	no response	taps	Yes
8.	visual model	2 taps	taps	Yes
9.	auditory model	laughs and taps top	responds to teacher	Yes

(banging the tray counted as 'no relevant response' for Helen.

There were nine teacher/observer records for matching, of which nine were considered a match.

This table demonstrates 100% agreement



**Alice (video of taught task compared with teacher's record)**

		teacher	observer	match
1.	initial	responded by smiling	looks	Yes
2.	visual attention	watching	?	No
3.	auditory attention	took my hand to repeat the sound	taps, puts teacher's hand on top	Yes
4.	tactual/kinaesthetic attention	began tapping	holds on side, taps side	Yes
5.	visual gesture	retracted hand	no response	No
6.	auditory gesture	no response	no response	Yes
7.	visual model	picked up container and lost interest in the ball	co-operates	No

There were 7 teacher/observer records for matching, of which four were considered a match, demonstrating 58% agreement.

**Alice (second video of taught task compared with teacher's record)**

		teacher	observer	match
	initial	holds jar, taps side	holds pot top	Yes
	auditory attention	picks up and mouths lid	bites lid	Yes
	visual attention	brief visual attention then taps sides	no attention	No
	tactual/kinaesthetic attention	touches top and reaches for my hand to help	handles pot and reaches for adult	Yes
	visual gesture	continues trying to press, uses mouth	reaches for adult bites top	Yes
	tactual/kinaesthetic gesture	tries to press button	presses top of rim	Yes
	auditory gesture	taps sides, mouths top	touches button, bites lid	Yes
	tactual/kinaesthetic model	completes one part HOH	co-operates	Yes
	auditory model	again completes HOH	co-operates with tactual prompts	Yes
	visual model	reaches for adult ... manages to push button	asks for help and completes with help	Yes

Ten records were matched and 90% were considered a match by the third person.

**Debbie (video of taught task compared with teacher's record)**

		teacher	observer	match
	auditory attention	located by sound	holds it	Yes
	tactual/kinaesthetic attention	remained fixated	touches, bangs	Yes
	visual gesture	no response	no response	Yes
	(second visual gesture)	looked, returned to flicking	rolls it around	Yes
	auditory gesture	remained (flicking etc)	tries to pull ring, bangs	No
	tactual/kinaesthetic gesture	felt ring, pulled up	holds onto ring, shakes	Yes
	visual model	no response	rolls around, shakes	Yes
	auditory model	no response	shakes resistance	Yes
	tactual/kinaesthetic model	some response	co-operates	Yes

'Shaking' and 'rolling around' do not count as relevant responses for Debbie.

Eight records were made by the teacher and second observer, and 88% of these were considered a match.

**Fallon (video of taught task compared with teacher's record)**

		teacher	observer	match
	tactual/kinaesthetic attention	yes (ie. attention is gained)	tries to open with key	Yes
	auditory attention	yes (ie. attention is gained)	takes key out pulls box over	Yes
	visual attention	yes opened red tin	picks up keys	Yes
	visual gesture	not orienting key	tries to open box with key	Yes

Only four records were available for Fallon and they show a match of 100%

**Siobhan (video of taught task compared with teacher's record)**

		teacher	observer	match
	tactual/kinaesthetic attention	sit and hold pot	holds	Yes
	visual attention	no response	took when touched	No
	auditory attention	no response	no response	Yes
	visual gesture	no response	no response	Yes
	auditory gesture	no response	no response	Yes
	tactual/kinaesthetic model	hold and explore vibrating pot	holds pot	
	auditory model	no response	no response	Yes

Seven records were available, of which six matched, 86%.

## **APPENDIX 6**

Letters to parents as used in phase three of the project, with the project outline. Letters differed slightly in different phases, and letters to teachers and schools were also slightly different.

## Appendix six

Dear (parent)

My name is Liz Hodges, and I am a qualified teacher of deafblind children. I work as the Advisory teacher for deafblind children in (county name). I am currently undertaking a small project about the ways in which deafblind children learn and how their teachers and the staff who work with them assess their learning strategies. This project is part of a study course I am doing at the University of Birmingham.

In order to do this successfully, I will need to involve some children and the staff who work with them. I am writing to ask if you will allow me to include (child's name) at this stage. This work is intended to be a part of the sorts of things (child's name) usually does in school, and should not interrupt her classroom programme. I have discussed the project with the school, and they have agreed that it will probably be useful to (child's name) and the staff who work with her. Of course, it will also be useful to me, as part of my studies. I have attached a general outline of how the project will work.

I would also like to **take some video tape** of (child's name) working with a member of school staff. This video will be seen by me, the school, one other professional, to make sure that I am doing it right, and possibly by my supervisor in Birmingham, but will not be used for anything else without me asking for specific permission.

I would also like to look at (child's name)'s school records – annual reviews and classroom reports to discover what other members of staff have previously felt or recorded about her learning style.

**No names of any child or member of staff** will be published in the reports of the research. However obviously some details about children, such as how old they are, something about their vision and hearing difficulties will need to be included.

I would be grateful if you would allow (child's name) to be a part of this study. **However, I assure you that if you would prefer not to be involved, that this will not affect (child's name)'s education in any way. It is entirely your choice.** It will not affect any present or future work I am doing with (child's name) or the school. You can also ask that (child's name) be withdrawn from the study at any time.

Appendix six

I would be very happy indeed to discuss the project with you in more detail either by phone or letter, either before we begin work, or to discuss what has been learnt.

Please do get in touch if you would like to, via the school.

As this is a 'formal study' I have attached a form to sign. If you are happy for (child's name) to take part, please could you sign the form, and return it in the envelope provided. Eventually the work will be part of a research study for the University of Birmingham, and parts of it may be published elsewhere.

If you would like to talk to me about it, please do get in touch with me at the address above, or through your child's school.

Thank you very much for taking the time to read this letter.

Yours sincerely,

Liz Hodges.

---

If you are happy for your child to take part in this study, or would like further information, please fill in the slip below, signing it to give permission for your child to be involved. Then return it in the envelope provided.

Liz Hodges Project

Learning skills in deafblind children

Child's name **(child's name)**

I am happy for (child's name) to take part in the study.

Parent's signature.....

Date.....

I would like to discuss it further with you  
please will you phone ; (please give a number and suggest a time to ring)

Please will you write, giving more details about.....  
(please give address)

Please post this in the envelope provided.

## **Project outline**

### Learning skills in deafblind children.

I am looking at the ways in which deafblind children learn, and how we can assess these, and use them to promote learning in individual children.

I am a teacher of deafblind children, with some experience. I hope to find out how we can assess and pass on valuable information about not only what deafblind children learn, but how they learn the things they do.

In order to do this, I am talking with teachers and staff who work with individual children about what they know about the child, their learning process, and their achievements. I will then write these up for the staff to check. Following this, the member of staff will be asked to work on a short agreed task for a short period of time (maybe a week), recording aspects of the child's learning. One or more of these sessions will be videoed, if appropriate/possible. This record will then be discussed by me and the member of staff to draw up a short learning profile which will be structured to work on a second task, also with a record. Final results and conclusions will then be discussed. I will also look at children's academic records – annual reviews and other class documentation – to see how other teachers at different times in the child's life have seen the child. I will also talk to other members of staff to get as full a picture as possible of the child.

The information will be collected by interview (on tape) a videotape, to ensure that I and the member of staff are in agreement about what we mean about certain things and from the record sheets themselves.

No children's names or staff names will be published in the report. I intend to assure everyone that they have an absolute right to choose whether or not to be involved, and that choosing not to be will not affect any work I am doing, or will do with children staff or schools.



## Appendix six

The work is based on the work of those such as Feuerstein who worked on dynamic assessment, and Vygotsky, who talked about scaffolding progress, with some regard to more recent work about learning styles in children and adults.

At the end of the project, the work will be part of a research study I am undertaking with the University of Birmingham. It is likely to be some time before this complete report is published, but I will be happy to keep in touch with those involved about where the project is going. Ongoing work may be submitted for publication before this. Please let me know if I can do any more for you.

## **APPENDIX 7**

### **COPY OF INTERVIEW SCHEDULE.**

Preamble;

I would like to talk to you about the way in which you see Jessica, and the way in which you think she learns. After this I would like to set up a specific learning task with you and Jessica, for you to work on , just for a short number of sessions. I have some suggestions for the sort of task this could be. I hope you will work on teaching this task to Jessica, and keep some notes while you are doing so. I hope that you will then share these notes with me, so that we can both see if the enterprise has been useful!

## **QUESTIONNAIRE FOR TEACHERS**

### **1. How long have you been teaching here?**

*length of experience*

### **2. What is your educational background - (and training?)**

*Lengths of experience, type of training - special needs background specialist training in deafblindness*

### **3. Tell me a bit about Jessica - how old is she? what is her vision and her hearing like?**

*Vision - scores*

*Hearing - scores*

*Age*

*Other relevant factors (how long has she been in school)*

### **4. How long has Jessica been in your class?**

**5. Do you think you know her pretty well?**

*relationship,*

*depth of understanding*

**6. What did you know about her when you first started to teach her?**

**What did you think about her then?**

*intelligence*

*type of learning*

*relationship*

*expectations*

**7. Do you think differently about her now you've been teaching her for --  
----?**

*Change in expectations*

*knowing about her learning*

*difficulties in skills*

**8. Has she ever had an assessment test that you know about ? At pre-  
school? At statement date? what sort of assessments have you  
used ?**

Queries - SLT, (PCVS, ACA, pragmatics, anything else,) Pre-school -

Portage, school assessment checklist, school based checklist

*What type of assessments thought relevant?*

*formal, informal assessment*

*observation or formal assessment*

**9. What are the current programmes she is using? How did you decide  
what targets to use with her?**

*observation, formal assessment, things parents brought up,*

**10. What has been her greatest success since you started teaching her?**  
*something she can do now that she could not do before?*

**11. What contributed to this?**

**12. How did you teach her to do this?**

*speed, number of presentations, extrinsic motivation, people place, materials, situation, what modalities she was using, her own personality, her previous skills, the teaching technique, prompts, etc.*

**13. Any other great successes? What do you think she likes doing?**

*Learning styles,*

*types of behaviour she's learnt*

*ecological or behavioural styles, in context, out of context, people, etc. relevant*

*types of interest, equipment she likes,*

**14. Why do you think she was so successful at these?** *learning styles,*

*relationships, familiarity, motivation, teaching techniques*

**15. What have you tried to work on that wasn't so successful? -  
something you've been doing for a long time?**

**16. Why do you think this hasn't been so successful?** *unsuccessful*

*strategies, number of times, type of equipment, type of task, setting, learning modality*

**17. How would you describe your teaching style?**

**18. How would you describe Jessica's learning style?**

**How would you rate Jessica's vision and hearing on the following scale?  
Which categories would you put her in?**

**Visual impairment**

1. Children who can respond visually only to bright lights, or cannot respond to visual stimuli.
2. Children who are able to respond to certain visual environmental stimuli, but not in a consistent way
3. Children who are able to respond to certain environmental stimuli in a consistent way
4. Children who are able to respond to most or many stimuli visually and consistently.

**Hearing impairment**

1. Children who can respond only to very sudden and loud sounds, or cannot respond to sound.
2. Children who can respond to sounds at a voice level when adult is close to them, but not consistently
3. Children who can respond consistently to sounds at voice level, when adult is close to them.
4. Children who can respond to many voice and environmental sounds.

## **APPENDIX 8**

### **RELEVANT PARTS OF INTERVIEW WITH HAYLEY ABOUT ELIZABETH**

Relevant extracts from interview.

The interviewer's questions are paraphrased for clarity, and the respondent's answers are edited for clarity and additions, substitutions and deletions have been made to protect identities of child and adult.

#### **Teacher experience and education**

*How long have you been working here?*

How long has it been, eleven years? coming up twelve

*What is your educational background and training?*

Before I came (to present school) my training, I have a certificate of education, ... but I taught PE in mainstream school for a number of years and then moved into special because of the training that was offered (at this school). Since teaching here I have got the diploma, in multisensory impairment, 6 years ago.

*Since then have you always worked with multi sensory impaired children?*

Yes

#### **Details about child**

*Tell me something about Elizabeth, how old she is, what you know about her vision and hearing, other relevant factors*

She's coming up to nine in a couple of weeks time, she has a specific problem in vision with scarring which is probably going to be a deteriorating condition, functionally, she's using her vision extremely well, especially over the last year/six months she has started to explore and get up and move around, and appears to be able to recognise a really well known environment, and knows where to move to for favourite toys and things. With Elizabeth she almost

## Appendix eight

needs to be active and moving for her to really use her vision, I think when she is being pushed, when she is in the buggy, she can switch off, doesn't appear to pay an awful lot of attention

*What about table top tasks, closer activities, what do you notice?*

Closer activities, she can locate, sometimes she misses slightly when she is reaching out to get something, you can see that she's looked at an object, she's recognised an object and then she will reach out for it, but I do wonder whether the close up vision is not as good as the distance,

*What about her hearing?*

Hearing is a real toughie, she has had various hearing tests, and she has a diagnosed moderate to severe hearing loss, sensori-neural but - it really is a bit of an unknown, because hearing aids have been used with her, but she really doesn't tolerate them well, they are just a bit of annoyance to her, and as with a lot of things at the moment she treats everything as something she can play with, . she won't tolerate aids, but she actually does make very good use of the auditory environment, when the motivation is there, she enjoys sound making, so clapping and banging

*How long has she been in school?*

I'm not sure, ... three... four years?

She was in a PMLD group as the description was then, and that was really because mum did not like the idea of ..... deafblind units, because she saw a nature of child that she didn't feel Elizabeth was, and she was (initially) opposed to the move away from PMLD into an MSI group

*How long has she been in the MSI group, in your class?*

Two years (in my class all the time)

*Do you think you know her well?*

I think it is a lovely relationship, but we have had to work at it, I think she didn't really understand what a relationship was, and what another person is, and she still struggles with that, she has some very specific motivating things, which she will do with every object, every toy that she comes across, does it bang and make a good sound? and she does those to people too. So, you would be close to her, and she would reach out, and she would love you then

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just to sort of be able to swing. It would be too pretentious, to presume I understand her, I think that there are times when she is a mystery, because you feel that what she does in some circumstances seems to be quite clever, you think yes, she is really getting there and then, she does seem to revert back to some extremely basic behaviours,

### Initial expectations

When you first started to teach her, about the way she was learning, and the sorts of relationships she might build, what sort of expectations did you have? There was a complete lack of understanding of what she was capable of doing, lack of understanding of how she was functioning, and working with her in a very set and specific way as we have been taught by Nind and Hewett, and that just didn't work with her really, she was very much wanting to block you out.

Quite low expectations I would think, the fact of the vision and the hearing seemed to be something she was going to have problems with, I would say, yes, that she's actually exceeded my expectations, definitely over the last year.

*When you first started to teach her, what sorts of teaching were you doing?*

Doing everything with quite functional things within the routine, she would just let things happen, she would be led, she would be very sort of placid, she would let you move arms and wherever you wanted them to, without really showing an awful lot of understanding of why she was doing it and without really showing any initiating herself, so she didn't seem for a while to have picked any type of action you were doing with her. I was concentrating on awful lot on mobility, because she was pulling herself up to standing so that was quite exciting, so we would try set routes for specific purposes, like the walk from the classroom into the hall for dinner, so that there was a purpose, and hopefully more of an understanding from her



### Successful and unsuccessful learning

*What would you say was her greatest success, is it mobility?*

Yes I really do think it is, but there is also another huge step, that she will look at me, and look at a face.

I followed her to see where she is going, she is going up this corridor, it is the first time she has walked up the corridor by herself, ....she was heading for the radiator, so she could go and bang it, and that is when she is frustrating, because on one hand, she is doing this fantastic thing, but in the end, she just wants to go and bang the radiator.

*How did you make this happen?*

She is the type of girl who didn't like me to be with her too much, and she wasn't very keen on holding hands, she just didn't want to be hassled by other people, so she was doing it by herself, getting the feeling of the feet, I suppose it was like looking at (where her balance was), and seeing how we could do that without intervening too much ourselves, having motivating things for her, that she would have to get to, and then just trying to get her to do it as much as possible herself, we used to have lovely sessions with the big physio ball, following the physio ball up the corridor, and she would keep moving the length of the (corridor), using her vision but since then there have been occasions where I have expected her to move by herself, and have called her name, and she does seem to respond to that. (I was involved) all the time, now, she's doing an awful lot more exploring, climbing into ball pools and onto tables I don't know whether she got started, I think Lily (another pupil) started her doing that.

*How did she learn from Lily?*

She's seen her, and she has climbed up, I don't know whether she has imitated, but certainly she has climbed up onto a table, they are definitely aware of each other... but they don't particularly like each other I don't think.

*Any other things she likes?*

Another great success is the fact that now she will stay with an adult during an activity, whereas before you were constantly encouraging her to stay with you,

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you had to physically pull her back in a massage session, she will stay with you for, and relax in a group session and that is also lovely because she can be always on the go, also success in a small group situation with the other children in turntaking accepting that there is this great toy that she can see, but actually it is not quite her turn to have it.

*Why do you think these have been successful?*

Because it's just routine, it's just repetition I'm sure, so I think it's routine and security, that she knows something nice is going to happen, I think just security really

*What makes her feel secure?*

Place, things within place, the objects and all the furniture and everything, to a certain extent adults as well, she doesn't show that quite as much,

*How would you sum up the things which help her learn?*

Repetition, safety and security, motivation aspects, comfort and length of time probably, short sessions

*Have you tried anything that wasn't successful?*

I am still doing things in a very functional, routine way and things that I have tried to do that haven't been successful, but I wouldn't stop doing it, for example, recognising that clothes are functional objects that she needs and are not something to play with, and I want to persevere with that, Because she is extremely keyed in to her particular motivating activities that overrides anything else, even something terribly important and motivating to her like drinking or eating,

*Do you think your expectations of her have changed?*

I don't know whether they have changed, but I feel that things have just happened a bit quicker maybe than I thought, but just the fact of her interest in, increased interest in everything around her is greater than I expected

*Do you teach her better now than when you first met her?*

I think maybe within increased expectations, then you do, because with that lower level of functioning it is incredibly difficult to move on, but with Elizabeth she's actually shown me from what she is doing, what is next.

## **Targets and assessments**

*Has she ever had an educational or developmental assessment - have you ever done one?*

I haven't done any sort of formal, even functional assessment with her, I feel that I am almost doing it as I go along in a way. When she first arrived, of course Linda [not specialist qualified teacher of PMLD group] did a Callier Azusa.

*Do you think there is any sort of assessment that would be relevant and you would like to do?*

Probably the answer is no, because I feel I know what I am doing with that, and what she needs: developmental, well, I suppose it could be an interesting thing

*How did you decide on current targets?*

Well one of them is not to treat things (by swinging and flicking), the turntaking and recognition of peers I think is very important with her, to stay on task for a short length of time, to understand the start and finish of that type of session, to make use of some simple cueing objects, (I decided on these) really by the knowledge of what I am wanting her to do next, by seeing what is stopping her at the moment from taking a next step.

## **APPENDIX 9**

### **COPY OF PILOT LEARNING STYLE ASSESSMENT**

The assessment was laid out differently to provide space for recording.

Assessment document

Learning strategies in the deafblind child.

While working with the child, or after this work, on the task chosen for this assessment, use the headings to note down the way in which the child appears to be using her skills to learn the task. Completion or success in the task is not important. It is the skills for using this learning which are being recorded.

Under the headings, where the terms may not be self explanatory, I have suggested what I had in mind when I used the term.

Please make comments as you wish - if you want to make more comments, do attach more paper!

An open attitude to the way the child might be using her learning skills is obviously the most helpful at this stage. The notes may (but also may not) suggest other ways in which might be appropriate approaches to teaching the child.

Please also note any other comments which you perceive as significant, which are not catered for.

I am very appreciative of your help.

## Appendix nine

### **Prompts**

Prompt - assistance to complete the task, by pointing, for example, by showing the child how to do some thing, by assisting

What type of prompts did the child use - physical, gestural/verbal or imitation based prompts? Were the prompts general or specific?

How many prompts were needed to achieve correct performance? Was the child able to complete the task without prompting at every turn?

For how long did prompts continue to be needed - could they be faded? if so, how quickly?

### **Instructions**

Instructions - any means of conveying to the child what she should do, do next, how to achieve the task

How long were the 'instructions' the child could attend to ? i.e. one element, several elements in sequence

What type of instruction did the child use? (visual, auditory, physical, tactual, or any other type)

### **Modalities**

The means the child used primarily to access instructions, learning, completion, and memory for example this could be a physical, tactual, visual or auditory mechanism

What type of prompts did the child find easier to use?

What senses and perception did the child use to find out what the task was?

What senses and perception skills did the child use to complete the task ?

What senses did the child use to access their memory about the task?

### **Equipment**

Does the child demonstrate more interest in novel or familiar equipment and materials?

Can the child choose the correct stimuli/equipment to complete the task from all those available/ presented?

### **Tackling the task**

How did the child access the precise parts of the task- how did she show careful activity?

Did the child have a recognisable strategy for completion? (e.g. trial and error, solving the first part and then the next, learning from evidence.)

Did the child use different strategies or stick to one only?

Was the child able to use different types of manipulation and schema to learn to do the task and to complete it?

Can the child generate a pace of working which does not require permanent prompting?

### **Personal qualities**

Does the child tackle the task with confidence? How many attempts will she make for one part of the task?

Does the child persevere to finish the task, or quickly give up? Does success or failure make a difference to her?

What motivates the child - what are the rewarding parts of the learning, in relation to the child, the adult, and the task.

### **Working with the adult**

Does the child co-operate with the adult to do the task, or prefer to work alone?, in isolation

Does child use an adult model - physical, gestural, visual, or a previously made model which does not rely on the adult?

To what extent does the child's work depend on the relationship with the adult?

### **Permanent learning**

Can the child generalise the skills to a very similar but slightly altered task?

Does the child remember the task from session to session - how does she show this? (Speed of starting, familiarity with materials etc.)

Does the child show the effects of similar previously learnt skills, or previous knowledge within the new task (e.g. how to handle objects, how to work with adult)

### **Learning strategies**

What can you tell about the child's learning strategies -

What types of experimentation does she use

Is she flexible enough to try different ways of doing things?

Does she work in original ways, or only ways she has used before?

**APPENDIX 10**

**LEARNING STYLE ASSESSMENT – MODALITY PROMPT PREFERENCE**

The following sheet includes only the example for day one. On subsequent days the order of the prompts was altered.



## Appendix ten

### Record sheet for exploratory studies phase one

Initial observation of child with equipment - no intervention  
*how does child interact with equipment, what information is s/he gaining*

First prompt - visual  
*does it gain child's attention?*

(if not-) second prompt - auditory  
*does it gain child's attention?*

(if not- ) third prompt - tactual/kinaesthetic  
*does it gain child's attention?*

First assistance prompt - visual (gesture)  
pause and allow response  
*How does child respond?*

repeat

second assistance prompt -auditory - (of the type - 'you do it')  
pause and allow response  
*How does child respond?*

repeat

third assistance prompt - tactual/kinaesthetic (put child's hand on object)  
pause and allow response  
*How does child respond?*

repeat

Visual model - complete action, allow child to respond, repeat

Auditory instruction, and use of sounds, 'Lift the lid, turn it, etc....' allow child to respond, repeat

Tactual/kinaesthetic model, guide child through the task, allow child to attempt, repeat

How many prompts were needed to complete task?

How long were the prompts needed?

How many prompts were needed to achieve correct performance? Was the child able to complete the task without prompting at every turn?

For how long did prompts continue to be needed - could they be faded? if so, how quickly?

Can the child generate a pace of working which does not require permanent prompting?

## Appendix ten

Which factors brought attempts?

	Mode (senses)	prompt length
Attention		
Assistance		
Completion		
Memory		

Which factors brought success?

	Mode (senses)	prompt length
Attention		
Assistance		
Completion		
Memory		

## Appendix ten

### **Record sheet for phase two and three**

ring **NR** if there is no response

Initial observation of child with equipment - no intervention

*how does child interact with equipment, what information is s/he gaining*

First prompt - visual

*does it gain child's attention?*

**NR**

(if not-) second prompt - auditory

*does it gain child's attention?*

**NR**

(if not- ) third prompt - tactual/kinaesthetic

*does it gain child's attention?*

**NR**

First assistance prompt - visual (gesture)

pause and allow response

*How does child respond?*

**NR**

repeat

second assistance prompt -auditory - (of the type - 'you do it')

pause and allow response

*How does child respond?*

**NR**

repeat

third assistance prompt - tactual/kinaesthetic (put child's hand on object)

pause and allow response

*How does child respond?*

**NR**

repeat

Visual model - complete action, allow child to respond, repeat

**NR**

Auditory instruction, and use of sounds, 'Lift the lid, turn it, etc....' allow child to respond,

repeat

**NR**

Tactual/kinaesthetic model, guide child through the task, allow child to attempt, repeat

**NR**

How many prompts were needed to complete task?

How long were the prompts needed?

How many prompts were needed to achieve correct performance? Was the child able to complete the task without prompting at every turn?

For how long did prompts continue to be needed - could they be faded? if so, how quickly?

Can the child generate a pace of working which does not require permanent prompting?

**APPENDIX 11**

**EXAMPLE OF COMPLETED RECORD SHEET FOR USHA**

## Appendix eleven

Initial observation of child with equipment - no intervention

*how does child interact with equipment, what information is s/he gaining*

sat and waited and did nothing. Began to vocalise and whinge (30-60 sec)

First prompt - tactual/kinaesthetic ⇒ placed hands on

*does it gain child's attention?* pulled hands away

(if not-) second prompt - visual ⇒ pointing

*does it gain child's attention?* no

(if not- ) third prompt - auditory ⇒ tapped box

*does it gain child's attention?* yes and she looked

First assistance prompt - tactual/kinaesthetic (put child's hand on object)

pause and allow response

*How does child respond?* immediately pulled hand away

repeat same as above but afterwards put hand on top

second assistance prompt - visual (gesture) ⇒ pointing

pause and allow response

*How does child respond?* nothing

Repeat

third assistance prompt - auditory - (of the type - 'you do it') ⇒ "look in the box,

Sarah"

pause and allow response

*How does child respond?* looked and put hand on

Repeat

Tactual/kinaesthetic model, guide child through the task, allow child to attempt, repeat

hand over hand ⇒ hit sticks, push lid off, lift scarf.

She then saw spinner and put hand in but ended up pulling on sticks

Visual model - complete action, allow child to respond, repeat

**(no record)**

Auditory instruction, and use of sounds, 'Lift the lid, turn it, etc....' allow child to respond,

repeat

**(no record)**

How many prompts were needed to complete task? 12

How long were the prompts needed?

How many prompts were needed to achieve correct performance? Was the child able to complete the task without prompting at every turn?

no, but did attempt to pick spinner up when she saw it

For how long did prompts continue to be needed - could they be faded? if so, how quickly?

Can the child generate a pace of working which does not require permanent prompting?

**APPENDIX 12****HEADINGS FOR THE RECORDING SHEETS FOR CLASSROOM OBSERVATION****Prompts given by members of staff**

initials	visual prompts	Child's response
initials	auditory prompts	Child's response
initials	tactual/kinaesthetic prompts	Child's response

**Novel/familiar situations people**

Example would be – new cup, new snack, new person - (need more than one ideally, but also any new situation)

initials	Usual situation	child's response	Novel situation	child's response
			<i>Describe difference from usual</i>	

**Person/object oriented**

Paying more attention to people or objects

Interaction with people or objects more significant

Working alone, or only with adult (what does she do alone with object)

Does child use adult model or prompt to attempt, or feature of object

initials	Activity	People/object
	<i>What cues her in, what is her interest in,</i>	

**Motivation – internal/external**

initials	Activity	Motivation	learning?
		<i>eg. internal, or reward, interaction, praise</i>	

**Context bound or out of context**

Same task presented in a different way; same objective (reaching, hand to mouth, looking in a task with context and when requested. Is task perceived as whole or behaviour as not part to child? What contexts are most familiar/ relevant?

initials	Task	Behaviour	child's response
	<i>What the task is – eg. Dinner</i>	<i>what the individual behaviour observed is;</i>	

**Confidence/perseverance**

Does she care if she finishes it?

Will she attempt a task again if failed? Does she see herself as able to do it?

Active/passive learner?

initials	Activity/behaviour	How many attempts at activity/target	Aims to finish task

**Speed and pace of attack at learning**

eg. speed of working which doesn't need prompts

rapid attempts (inc failures), or methodical to achievement when is interested

initials	Activity	Speed	Result

## Appendix twelve

### Small parts or whole task

look for; motivation, interest, attempts to complete; what is adult doing;

how is whole task represented – ends; which one shows increased progress ?

initials	Whole task (what is it)	Small part attempted	child's response
	<i>Complete only this if whole task</i>	<i>complete this only if small part is used</i>	











**APPENDIX 13**

**PHOTOGRAPHS OF EQUIPMENT USED BY CHILDREN FOR TASKS**

Appendix thirteen

Other equipment

			
<p>Helen's tambourine</p>	<p>Shula's drinks</p>	<p>Caroline's tea tin</p>	<p>Fallon's file case</p>
			
<p>Debbie's task</p>	<p>Grace's task</p>	<p>Kate's box</p>	<p>Satya's tin</p>

## **APPENDIX 14**

### **ANNOTATED VERSION OF INDIVIDUAL CHILD PROFILE AND EVIDENCE**

This is an edited version of one of the child profiles, some of which ran to 20 pages, depending on how much evidence there was, for example, in written records. The profile has been edited so that the use of different sources of evidence is shown, but many examples and some whole aspects of style have been cut. The summary at the end is based on all the evidence, including that which has been excluded from this document.

## Christine: Learning style profile.

### Prompts modality preference; visual/auditory/tactual/kinaesthetic

TT= teacher CA= classroom assistant CC= child.

	<b>Visual</b>		<b>Auditory</b>		<b>Tactual/kinaesthetic</b>	
Observation	TT gestures/(+ speech) 'stand up'	Yes, reached hand, stood up	TT What are you singing?	made singing sounds	TT wanted her to stop, took hands to prevent her from turning off tap	C turned it on anyway
	TT sign 'bricks, book, sand, water,' (+ speech)	Sat at table, watched, tried to play wanted to touch each thing	TT shakes shaker and bang on table	turned to shakers on table	TT HOH to touch ORAC key to 'on'	resistant
Interview	<b>Visual modality</b>		<b>auditory modality</b>		<b>tactual/kinaesthetic modality</b>	
	vision serves her well, doesn't seem to have a lot of problems with vision, good fine motor control		Profound loss left ear, moderate loss right ear. Cups right ear to 'listen' sometimes			
	she'll watch you doing it, and she'll scribble on paper,					
Written records	<b>visual</b>		<b>Auditory</b>		<b>tactual</b>	
	can use her visual skills to carefully examine toy before discarding (99)		is motivated by noisy programmes (99)		has tendency to mouth objects (99)	
	motivated by objects/toys which give a visual reward when operated (00)		eye contact can be improved by adult calling her name (99)		she will respond (to make eye contact) with physical prompt (99)	

**Novelty/Familiarity**

Observation	Interview	written notes	Interpretation/reflection
	she very much likes novel experiences or toys, novel, she likes things with a novelty aspect		likes novelty and new things
		Immediately settled well into school (99)	didn't mind unfamiliar
		easily frustrated by change to her routine (00)	doesn't like new things
		enjoys exploring equipment (referentially suggests it is new) (01)	likes different things

**Person/object orientation**

Observation	Interview	written notes	Interpretation/reflection
Reading book with (teacher). Watching face while putting plasters on		Watched adult and plasters (object) while working with (teacher).	
Putting objects out for story - watched (teacher) putting rings on her fingers.		Watched objects on fingers and not watching (teacher)	
Watching (child) with toy – but watched toy, not child		Watching toy, not (child)	
	not very keen on language type activities, and writing and drawing and that kind of thing,		doesn't enjoy language interaction with people ?
	the problem with C is sometimes materials are too distracting,... because after she's had them for a few minutes she just wipes it all off the table		sometimes uses objects for stereotypies and other not very learning type of activities. needs help to manage objects?
		attempts to interact with peers (99)	interested in people
		rarely initiates interaction with adults or children unless she is motivated by the object they are holding (MM 00)	not people focused
		she is rarely motivated by interaction and continues to be primarily object orientated	not people focused

**In context /out of context**

Observation	Interview	written notes	Interpretation/reflection
	how did you teach her that? by playing games, I suppose		within a certain routine – learns the game to learn the skill
		Immediately settled into school routine (99)	liked context
		heavily dependent on routine (00)	needs context to learn
		easily frustrated by change to her routine (00)	likes the context of tasks

**Confidence/lack of perseverance**

Observation	Interview	written notes	Interpretation/reflection
Wind the bobbin song ; tried the first bit, then stopped and did not finish task			did not complete or even try to
Giving her different objects to put away – finished doing this –			did complete task
		uses problem solving skills to dismantle mechanical objects (00)	sees this task through

**Tempo of learning**

Observation	Interview	written notes	Interpretation/reflection
Putting 3 plasters on GH within story routine			Needed prompts to complete placing all three plasters on teacher – couldn't complete activity alone

**Small parts/whole task**

Observation	Interview	written notes	Interpretation/reflection
Books and stories with teacher; Christine required to show actions to story; she did partake in individual actions at appropriate moment with minimal prompts			?? she showed some responses to this series but ? understanding of whole sequence, or using sequence to prompt her?
Drum roll to cymbal strike in song – both offered in routine			Drummed for several strokes then looked for cymbal to play and struck independently – showed understanding of routine and acted within it
	there is a toy, .. where you have to move shapes up a sort of tree like thing.... and you have to orient them... well she'll watch you doing that, and then she'll have a go at doing that...		watching a whole task and then copying it? but without seeing this, difficult to say if she attempts several parts or only one movement.
		suggestions that she holds paintbrush, makes marks on paper, rather than tackling whole task (99)	does parts of whole tasks – whole is not offered to her?
		will dismantle mechanical objects, using her problem solving skills	will go for whole task if sufficiently motivated



## Appendix fourteen

### Other areas mentioned in interview:

learning has to be done more through play; (need for informal activity?)

needs to be distraction free unless it is quite an active thing (Unable to cope with multiple stimuli?)

I thought it might be easier to get her to hold a pencil and do what you want to do (possibly not as able as previously considered?)

## **Summing up of Christine's apparent learning style from this point**

### **Prompt modality preference**

Christine responds well to all three modalities. She resists tactual prompts, but is very physically driven. She doesn't always make sense of auditory prompts. Visual prompts have the most positive effect.

### **Novelty/familiarity**

This was difficult to see, because I did not have the opportunity to see Christine in really novel situations. Her teacher suggests that she likes applying her knowledge and exploration to new situations (taking apart a new toy). However, other aspects may suggest that familiarity helps her learning.

### **Person/object orientation**

Christine seems quite interested in what both adults and objects are doing, though not very interested in her peers. It may be that she perceives adults as animated objects, or that she genuinely enjoys both types of interaction. Certain sorts of adult behaviour are less acceptable (direction) and some objects lead to stereotypical play. Both factors therefore can inhibit and limit learning as well as progress it

### **Internal/external motivation**

It appears that Christine depends on internal motivation to complete tasks or to be interested in them. She needs to have intrinsic rewards in tasks (sounds and some tactual/kinaesthetic feeling) to help her to do them. She is not motivated by external praise, or bothered by what adults think.

### **In context/out of context**

Christine seems to show some ability to generalise learning across tasks, but she does use sequences and routines she knows to support her learning, and

to support her acceptance of people and tasks. (I haven't really seen out of context learning).

### **Confidence/lack of perseverance**

Christine needs some support in learning as she is not yet able to initiate some activities or to see them through to the end. However, it may be that she will attempt most things offered within secure environment.

### **Tempo of learning**

Christine may have learnt whole sequences of activity, but she is somewhat reflective, with a slow pace of learning, but determination to succeed in some situations.

### **Small steps/whole task**

Christine appears to be able to use quite complex sequences of learning, and to see the general purpose of a task (but this could also relate to her quite advanced cognitive level). She understands sequences and can respond appropriately in them. She may like to watch a whole sequence before responding herself, indicating that she has a wholist approach to tasks. This may also explain her ability to take items apart without being able to see how they might go back together!

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