SEVERE LEARNING DISABILITIES

An investigation into the incidence and treatment of children failing to reach their reading potential.

A thesis presented in partial fulfilment of the requirements for the Degree of Master of Arts at Massey University.

by

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SECTION 1

ABSTRACT

During 1976 teachers in Taranaki, as in other parts of New Zealand, were expressing concern for children who appeared to make scant progress in language skills despite the best endeavours of teacher and pupil. Discussions with psychologists and education department officers resulted in a research programme being structured to survey such a group. In view of the then current interest in visual and auditory perception deficiencies which were believed to contribute to learning difficulties, investigations were to be made of several strategies. It was planned to institute proceedings which would not only remedy deficiencies but could also become the basis for preventive action with similar pupils at an earlier age.

At that time teachers were available to allow staffing of the project and so two schools were selected for field trials. Teacher nominations of candidates were tested and groups of children isolated who would benefit from the programme.

Staff training commenced to build up a set of practices which would subsequently be modified as experience was gained. Teachers were also helped to devise monitoring behaviours to ensure adequate and comparable data collection strategies were instituted.

During the investigation, changes in approach were made as programmes developed and from new insights resulting from concurrent reviews of the literature which became available.

Two major shifts occurred, the second resulting in the abandonment of some major precepts concerning remedial programming. Investigations are still proceeding related to the early identification and preventive aspect.

THE PROPOSAL

It is now time to go back to the beginning. At that stage the writer held certain beliefs on causation and remediation of reading disabilities which became the basis for examining the hypotheses:

- That learning disabled children present a number of neuro-sensory deficits which led to their disability.
- That remedial programmes which build up these areas and reading programmes which are tailored to avoid use of those deficits will result in improved performance.

SECTION 2

LITERATURE REVIEW

What is normal? How does one describe a slow learner? What are severe learning disabilities?

When setting up the research programme it was often asked why it was decided to work with a group whom many believed did not exist. Indeed Dr Marie Clay has suggested that New Zealand schools should first concentrate on reducing reading failure to less than 5%. These commentaries really proclaim that reading failure is basically due to bad teaching or at least to inappropriate strategies and/or ineffective interventions. With this the writer agrees. It was therefore for this very reason that the Severe Learning Disabilities (SLD) group were sorted out for it was believed that if strategies could be derived which met the needs of these children it would be possible to generalise the programme for pupils who were underachieving for known reasons.

By definition one may say that 49% of all populations attain at a level below the average for their age. Are they slow learners? If one extends the concept of average to cover those attaining between the 25th and 75th percentile, some 25% still attain below average levels, and considerably lower if one were to derive a new median for the attainments of the remaining 75%. Are these the slow learners? Is it sufficient to define those who achieve less as being slow learners?

Are all slow learners mentally retarded? Or are there other causations? Many have been suggested. This investigation set out to investigate the learning disabled syndrome.

What is S L D? Literally, any child with a severe learning disability. However, as any child whose attainment falls significantly below his potential is already described as "retarded", the term is taken to refer to such children for whom no acceptable explanation of causation has been found.

Factors related to learning difficulties are varied and often multiple. For every failing child exhibiting factors believed to be relevant to his failure to learn, other children are found with the same problems who are coping or even doing extremely well.

This has led to the rejection of one cause solutions to learning failure. Often it has been hypothesised that such factors are only contributory and that appropriate teaching is the solution. From such hypotheses it may follow that causes are irrelevant - take the child from where he is and provide appropriate learning experiences and progress will be made. The second section of that tenet is accepted as being sound teaching philosophy and while the first premise is valid in terms of the child who has failed it is illicit to append it to all learners. One might say with equal justification that preventive medicine is irrelevant because medical science has reached the stage where it can remedy all, or most, illnesses.

To the writer it does not seem pointless to attempt to identify early those children who educationally are at risk and to attempt to provide programmes which diminish the effects of deficiencies and highlight other modalities. In certain cases deficiencies and some of their solutions are obvious - education of the blind utilises the hearing and tactile modes

while deaf education augments residual hearing and emphasises sight and touch. Continuing the medical analogy, pregnancies are constantly being monitored for at risk births - amniocentesis at weeks 14 - 16 will indicate Downs syndrome and spina bifida may now be detected by a simple blood test during the 16th week of pregnancy.

No-one cavils at providing assistance for the obviously handicapped. And indeed the educationally handicapped are also being assisted - slow learners - provided their IQ is below 75 and attainment is severely retarded may be helped through the provision of classes or resource teachers for backward children. Children who are retarded but not backward may receive some help from part-time teachers, or the half dozen reading clinics in this country or the enthusiasm of a teacher who wants to do something for "Johnny who can't read". Within this latter group there are groups of pupils whose failure to make adequate progress is believed to be affected, if not caused, by such factors as health - debilitation and hospitalisation; home environment - socio-economic levels; emotional insecurity; schooling - frequent changes, ineffectual teachers; pre-school experience - limited language due to cultural differences, subculture groups, ethnic origins. However, a further group may be readily discerned - a small number of intelligent children from "good" homes with wide pre-school experience, good command of oral language, sound in wind and limb, who somehow fail to make adequate progress in the early years and such lack of progress generally spills over into post-school life. When one examines their backgrounds, the usual concomitants of learning failure are missing.

For a number of years it was thought that such children suffered minimal brain damage, had perceptual problems - auditory and/or visual, lacked motor control, lacked lateral dominance or had some such similar type of neurological dysfunction. Studies indicating

- that the presence of blood in the spinal fluid of 95% of all live births suggests nearly all babies experience some degree of damage in the birth trauma;
- that some successful learners exhibit crossed dominance;
- that some children with perceptual problems are high progress readers etc;

have led to the rejection of the brain damage hypotheses by many researchers.

In the reading field much current research is being directed towards the learner and how he/she directs learning. On the basis that reading is only an aspect of language and that nearly all humans learn to speak, ie, teach themselves, then it follows that reading failure may result from inappropriate interventions by the teacher.

The purpose of this investigation was two-fold -

1 To search (a) for factors which may have been contributory to learning failure and (b) for assets the learner brings to the learning task.

2 To take the assets such children have and attempt to provide programmes to meet their specific needs. At first this would be largely individual work, establishing bench marks on attainment, examining ways in which each child learns best and detailing appropriate strategies which would be modified through subsequent experience.

Indications are that improvement in health, in factors leading to emotional stability, in factors dependent on socio-economic conditions, or in teacher effectiveness, lead to increased attainment levels. Similarly, learners with lesser intellectual capacity have progressed favourably in the shelter of special classes.

As there is evidence to show learning despite the presence of what are believed to be inhibiting factors, it is believed that it is not the presence or absence of such factors which is critical but rather how effectively the learner reacts to the misconceptions whatever their cause.

In Piagetian terms if the learner adjusts the incoming percepts and assimilates them into his previous understandings, there should be few problems. However, should he continue to adjust previous understandings to accommodate the incoming misconceptions then a breakdown in his faith that he has the power to understand the world is inevitable. Concern for those who lose touch with reality is outside the realm of this paper. However, in respect of specific areas it is believed that insults to the learner's cognitive style occur at the time of teacher intervention.

Examination of the S L D group - those whose failure to learn could not be accounted for in terms of intelligence, socio-economic deprivation, pre-school experience, frequency of teacher change etc, was extended to determine their ability with certain psychological processes. The reported findings of similar dysfunction in successful learners has frequently led researchers to reject the concept of an S L D syndrome.

By contrast this research is based on the premise that such factors are significant for many learners and accordingly the basis of selection was lack of academic achievement and the presence of certain neuro-sensory deficits. A detailed statement follows. This has been culled from reports and texts available to the writer who previously as inspector supervising special education had oversight of the psychological service and all handicapped children plus a district delegation of supervising the field of reading in this education board district.

The definition of the S L D category is vague, varying from country to country, clinic to clinic, clinician to clinician. Many researchers have looked for those specific objective characteristics necessary and sufficient to distinguish this group from all others and have found none. While some therefore deny the validity of the S L D concept it is a matter of experience that any group of handicapped children tend to be more heterogeneous than a random group of 'normals'.

Stanley A Perkins[1] states that -
When the National Advisory Committee on Handicapped Children of the U S office of Education suggested a definition of learning disabilities in 1968 there was general agreement, but major differences remain in conceptualisation. The definition stresses disorders in neuropsychological processes. It states - "Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling

or arithmetic. They include conditions which are referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance or to environmental disadvantage".

Cruikshank[2] goes further and claims that "learning disabilities are essentially and almost always the result of perceptual problems based on the neurological system" and for this reason believes the term should be modified to "specific learning disabilities" ie, specific and diagnosed perceptual problems in any one or in all sensory modalities. Furthermore, he believes that definitional difficulties will recede as less inclusive and more refined concepts are used.

If we examine the substantial number of pupils - say 20 - 25% who are unable to cope with the normal prescribed work of their age group, the proportion with 'unaccountable' learning delay is determined by the number of factors taken into account. At one time it was believed that variance in scholastic achievement could be accounted for almost entirely by variance in intelligence; in fact, this left a large portion of the observed variance in reading progress as 'error', 'residual' or 'unaccounted for'. The inclusion of factors such as social class, physical characteristics of the neighbourhood and school, parental attitudes and aspirations each in turn whittle down the unaccounted variance. Nevertheless, within any social class, individual school, individual family, or at any given intelligence

level, there are children whose achievement deviates substantially from expectation. In other words, there are unexplained factors within some individual pupils that exercise a major influence on their scholastic success.

Large scale research on random samples does not highlight these unaccounted discrepancies. Their apparent importance is diminished mainly because they exercise a major effect on only a small fraction of pupils, and also because there is quite a large number of distinct types of impairment, so that in any random group specific deficits average out, merely to appear as error variance at the foot of an analysis of variance table. Furthermore, it may be argued that even the unexplained variance does not give a realistic estimate of the influence of these intra-individual factors because the commonly controlled variables often correlate highly (but irrelevantly) with S L D factors. For example, in this survey there were found four S L D boys for every S L D girl. If sex is 'taken out' of an analysis of reading variance the unaccounted variance is significantly reduced without any acknowledgment of elements that seriously influence reading progress.

Much recent research has centred on processing deficits in association with learning disabilities. For example, learning disabled youngsters have been reported to exhibit:

- Auditory memory deficits (de Hirsch, Janskya Langford[3] 1966; Masland & Case[4] 1965; Spencer[5] 1959).
- Temporal sequencing deficits (Aten & Davis[6] 1968).
- Auditory figure - ground problems (Flowers & Costello[7] 1970; Lasky & Tobin[8] 1973).

- Reauditorization deficits (Internal auditory rehearsal of digits etc) (Johnson & Myklebust[9] 1967)
- Auditory-visual integration deficits (Birch & Belmont[10] 1964, 1965; Birch & Leffors[11] 1963; Stamback[12] 1951).
- Limitations in Symbolization, abstraction and conceptualisation (Johnson[13] 1968; Johnson & Myklebust[14] 1967; Myklebust[15] 1964; Strauss & Kephart[16] 1955).
- Deficits in linguistic processing (Farnham-Diggory[17] 1967; Menyuk & Looney[18] 1972; Semel & Wiig[19] 1975; Wiig & Roach[20] 1975).
- Deficits in cognitive and logical processing (Wiig & Semel[21 22] 1973, 1974).
- Perceptual-motor deficits (Hallahan & Cruikshanks[23] 1973).
- Visual processing deficits (Luria[24] 1966; Schuell, Jenkins & Jimenez-Pabon[25] 1964; Wepman[26] 1951).
- Form discrimination deficits (Bender[27] 1938; Cohen & Edwards[28] 1964; Marshall & Newcombe[29] 1973).

These are only some of the references extant in the literature. As one of the major premises is that no one deficit is causative but rather the absence of several abilities and then in relation to how the deficit impinges on the learners' schema, it is not necessary to be exhaustive in listing the known deficits, nor to test for them all. It will be sufficient to show a relationship between learning disability and the presence of several process deficits.

At the commencement of 1978 a boost was given to the project when the research section of the N Z Education Department accepted the project for funding. On receipt of a grant of $1000, equipment, books and materials were purchased and presented to the two trial schools.

A twofold reaction was noted. Teachers now felt they held a special position in the education field and strove to deserve it. Secondly, the actual resources made a significant difference to programming. More efforts of an individualised nature were noted. Tape recordings of pupil reading behaviour were constantly made and frequently referred to. Variations in types of reading material read increased while reinforcement activities became more closely related to the learner's needs.

As time passed, procedures close to many now being followed in the very successful Auckland Reading Recovery project were developed - regular, sustained and usually individual programming; careful monitoring of reading behaviour; regular formal evaluation of developments. This constant monitoring of reading behaviour led to variations being made to each individual programme. Coupled with this was regular contact with class teachers who were kept informed of each child's development. As a consequence, classroom expectations were generally in line with current abilities, thus reinforcing newly learned behaviours.

SECTION 3

PROJECT DESIGN

PART A. THE SURVEY

ANTECEDENTS

A decision to survey for the incidence of S L D pupils was brought about by several interacting factors. Members of the psychological service had been experimenting with a screening test (Appendix 4) to identify children who at an early stage were exhibiting difficulties which were known to be found in children failing to make adequate educational progress. Several schools were already exploring new ways of providing for children whose lack of academic development seemed unaccountable. A growing awareness at national and district levels that such unaccountable learning failure appeared to be more prevalent as earlier explanations of failure were found to be unacceptable.

Finally, a group of persons was found within the Department who had not only a concern for such children but also a long-term interest, had made a study of the related areas and were prepared to devote personal as well as official time and energy to an examination of the problem.

While it was recognised that this was a duplication in a minor way of Project Child[30] it was felt that the interest of teachers, parents and professional advisers was very high and should be capitalised upon. Accordingly, the remaining psychologists and the writer, as Inspector Supervising Special Education, set about formulating sets of criteria and procedures which may lead to more appropriate learning strategies for these children. One thing was certain - teachers knew

of children in their classes whose progress was not in line with teacher expectations. The first questions then to be asked were -

Were there others?

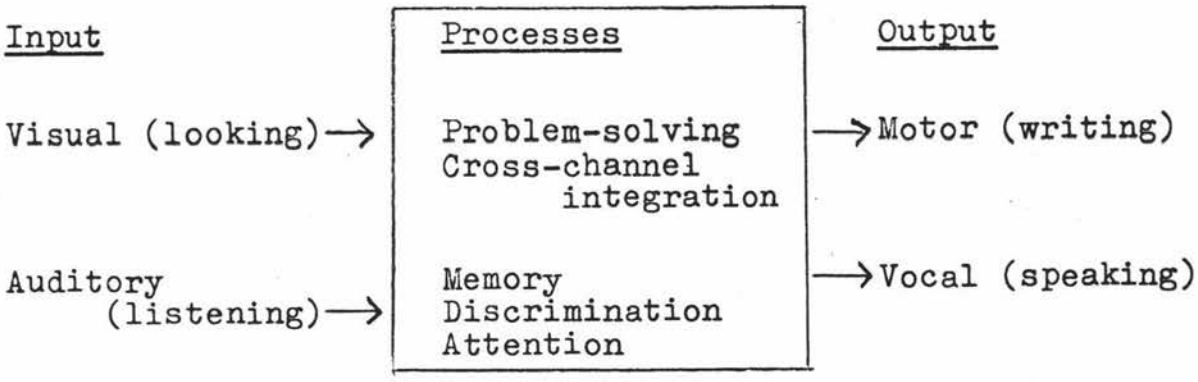
How to find them?

What to do with them?

Preamble:

Many surveys have been made to discover backward pupils for whom there are well-established and relatively easily measured criteria. However, if a survey were to be made of language disabled pupils, some discussion on the basic concepts involved and how they influenced procedures is necessary.

Particularly significant for success in reading and spelling are discrepancies in the effectiveness of relevant mental processes. Reading is viewed as a much more complex process than visual scanning. It is a formal extension of those oral language skills developed informally in the pre-school years. Auditory skills are therefore at least as important as visual skills. The brain is seen as an information processing device - something as follows :-



OPERATIONAL DEFINITION OF THE S L D CATEGORY

In order to carry out this survey it was essential to set up an operational definition of the S L D category, ie, a statement

of the acts or operations necessary to identify an S L D pupil.

Following discussion with the psychological service and the principals, selection was based on the following criteria :-

1 Failure to learn at the normal rate - ie, reading age and/or spelling age more than 18 - 24 months behind chronological age.

2 Discrepancies within the individual - notable evidence of average or better intelligence - whether from tests or suggested by conversation, social skills, art and crafts, hobbies .....

3 Exclusion of alternative diagnosis - defect of vision or hearing; impairment of normal development by emotional, cultural or domestic factors; mental retardation. Children cannot be automatically excluded on any of these grounds since the presence of one disability does not guarantee the absence of all others. However, the observed learning deficit must be substantially greater than would be judged the reasonable consequence of the defect.

4 The impairment of one or more psychological processes - attention, discrimination, memory, problem solving; cross-channel integration including auditory-visual association and visuo-motor co-ordination; confused laterality.

Procedures had to be designed to utilise school facilities and the depleted psychological service to their best ability.

PROCEDURES

1 Selection of population. It was felt that if any proposition were to be put forward for remedial action,

economy of numbers would be an important factor. Also, a decision was made to survey only pupils at the Standard 1 and 2 level, believing that remedial work would be more effective and pupil frustration levels less high. Accordingly two adjacent Grade VII schools were selected where -

a the principals were already trying to deal with this problem;

b there were staff members sympathetic towards such pupils and prepared to read supplied material relating to remedial programmes;

c space could be made available to withdraw such pupils on a regular basis;

d they represented a reasonable spread of the socio-economic field.

Two schools, to be referred to as School A and School B, on the above basis, were invited to participate in the survey and possible subsequent experiments.

2 Population description

SCHOOL A - Grade VII, Roll 514. A large contributing school, opened in 1957 as a Grade V and experienced continuous roll growth. Being adjacent to School B it drew on some state housing but also included several new and expensive housing developments and had as a basis a majority of "middle class" families.

SCHOOL B - Grade VII, Roll 452. A large contributing school growing from new Grade IV in 1960 to Grade VII in 1972. Roll growth was steady, the school had some 25% solo parents, 70 - 80% working mothers, and pupils came mainly from the "working class" associated with a state housing area.

Staffing in both schools was reasonably stable, experienced, and each probably had a better than average proportion of teachers of ability. As a consequence a reasonably representative sample of children from a large provincial city is believed to have been selected.

Within these schools the following procedures were carried out -

PROCEDURES

Nominations

Teachers of Standards 1 and 2 children were asked to review their classes and nominate for closer scrutiny approximately 20%. These should include :-

For Standard 1

1 All children with reading age or spelling age over 18 months behind their chronological age.

2 Any child whose Tomlinson[31] score was over 110, or PAT listening score above the 70th percentile, whose reading age or spelling age was more than 12 months behind chronological age.

3 Any child whom teachers felt, regardless of what tests said, matched the criteria for specific learning difficulties.

For Standard 2

1 All children with reading age or spelling age more than 24 months behind chronological age, or with PAT[32] reading comprehension scores in the bottom 15 percentiles.

2 All children with Tomlinson IQ over 110 or PAT listening above the 70th percentile, whose reading age or spelling age was more than 12 months behind chronological age.

3 Any child whom teachers felt, regardless of what tests said, matched the criteria for specific learning difficulties.

Each nominated child then -

a completed the Holbourn[33] reading scale and the Burt[34] reading scale;

b wrote his names, copied certain diagrams and printed the alphabet;

c completed the "Draw-A-Man"[35] test;

d completed the Schonell[36] spelling test A.

For each child in Standard 1, scores on the reading and spelling tests, a Tomlinson test, the PAT listening percentile and the rating for maths were listed.

For Standard 2 the same scores were listed, together with PAT comprehension, vocabulary and maths percentiles.

All children were then subjected to a series of tests to determine the levels of functioning of certain psychological processes. These were tested in accordance with the following table :-

PROCESS	VISUAL CHANNEL	AUDITORY CHANNEL
Attention	WISC coding	WISC digits
Discrimination	Schonell[37] Visual Word Discrimination Test (7 items)	Schonell Spelling
Memory	Schonell Test (as above)	Digits
Problem Solving	Block Design	WISC Information and vocabulary
Cross-channel Integration		
Auditory x Visual	Reading nonsense syllables - Vocal output Spelling nonsense syllables - Motor output (Daniels & Diack)[38]	
Visual x Motor	Design copying Draw-A-Man	Written work
Laterality - hand, foot and eye		

A complete analysis of a pupil's equipment for tackling the acquisition of literacy is seen as requiring an evaluation of the five processes in regard to two modes of input and two modes of output.

TEST RESULTS

The limits of time and ingenuity prevented testing of all possible combinations. Although the use of the same test in two or more contexts is recognised as unsatisfactory in principle, the procedure was found to be efficient within the context of a survey. For the prescription of a teaching programme a closer evaluation of each selected pupil's assets, liabilities, interests and, especially - starting point, would be needed.

Appendix 1, the summary of individual data, has been collated to show those falling into the S L D group as separate from the others. One may say that three clear groupings of pupils emerged from the nominated slow learner group - those now

categorised as S L D; a further group of under-achievers whose non-attainment is explainable on other grounds, but including two who also exhibit deficits in the psychological processes; and a group called "others" - generally backward children or those with a particular area of weakness - often spelling. In brief the results are summarised as follows -

RESULTS

Nominations totalled 80 pupils, ie, 25% of the target population.

Category	School A	School B	Total
SLD	17	14	31
NOT SLD	30	19	49
Total:	47	33	80

SLD PUPILS	Boys	Girls	Std 1	Std 2
School A	13	4	5	12
School B	12	2	7	7
Total:	25	6	12	19

S L D - DATA DISCUSSION

The statistics show clear evidence of failure to learn at the normal rate despite normal intelligence. None of the children nominated was considered significantly disabled by defective vision or hearing, though a few had slight hearing losses in one ear or vision corrected by spectacles. Emotional, cultural and domestic factors are not easily translated into figures but were assessed globally from the school's account of each child's family circumstances and from the psychologist's interview with the child.

The extent to which any given circumstance has influenced school performance can only be a professional opinion. Where teachers and psychologists felt definite impairment of personality growth or emotional stability had occurred, this was indicated.

The final criterion of selection, or sieve, through which the S L D had to pass, depended on assessment of psychological functions. The operations by which these were evaluated are described in detail on page 19 and the results are listed for each pupil on the data pages, in particular for the S L D pupils (see appendix). Here asterisk (weakness) and plus sign (strength) are used since estimate of adequacy of functioning in a given faculty depends not only on a test score but also on observation of how the pupil performs when required to make use of such faculties. Nevertheless the quantitative scores for auditory memory and visual discrimination have been reviewed.

Reference was made earlier to the manner in which over a whole group specific deficits do a statistical vanishing act. The mean auditory memory score of the S L D pupils (S2) is 9.8 in comparison with an expected average of 10.0. This might tempt one to argue that S L D pupils show no disability in auditory memory. In fact, about half do show weakness (indicated by asterisk) in this faculty, with a mean score of 7.2. Strengths are also recorded and the average score for these pupils was 12.4. The distribution is bi-modal :-

Score	5	6	7	8	9	10	11	12	13	14	15
Frequency	2	3	0	4	1	0	3	4	3	0	1
			WEAK						STRONG		

Similarly, on the visual discrimination test those marked as weak scored an average 11.4 and the strong an average 17.7. Altogether seven processes were assessed for each child.

Real and substantial differences in performance were found both between pupils and within each pupil from one process to another. Had these dimensions of mental functioning not been examined we

would have had a group of 31 pupils whose serious retardation would have been 'unaccountable' (or attributed to laziness, poor instruction or some other factor in regard to which they were relatively normal).

All children show some variation but these pupils were demonstrably showing abnormally large deviations from the norm in association with severe difficulty in learning. The probability of such an association arising by chance was not calculated as it would involve time that was not available, but by inspection it is clearly extremely remote.

RELIABILITY OF JUDGEMENT : S L D v NOT S L D

An indication as to the reliability of diagnosis is provided by inter-judge agreement. When the data was examined, doubts arose concerning how satisfactorily certain pupils matched the operational criteria. Critical re-assessment of eight border-line pupils, involving a fresh interview by the other psychologist, resulted in only two moving to the other side of the dividing line. Since there was total agreement concerning the remainder (72), it seems that given clear operational definitions two judges can arrive at over 95% agreement independently (and 100% agreement with case discussion).

CHARACTERISTICS OF BACKWARD PUPILS

Cluster analysis would be the most effective technique for objectively sorting these pupils into their natural groups, which hopefully would be clinically meaningful clusters, but this is an exercise for academics and computers. Accordingly the pupils are arrayed (see Appendix I where * indicates weakness and + indicates strength) into three main categories, viz., S L D, Sever under-achievers and "Others". Each group is

described in more detail later but the following table gives means for each group on the standardised tests.

(Technical note:
RQ = Reading Quotient = RA/CA X 100, Burt Word Recognition Test
SQ = Spelling Quotient = SA/CA X 100, Schonell Spelling Test A.

PAT Listening percentiles were for ease of comparability transformed into Z-scores, mean 100, SD 15.

Backwardness is defined by the discrepancy between a pupil's achievement and the average achievement of other pupils of the same age, ie, 100 - RQ or SQ.

Retardation is defined by the discrepancy between a pupil's achievement and his expected level of achievement, predicted from his intelligence level, ie, WISC IQ - RQ or SQ.

No correction is included for regression to the mean - partly for simplicity, partly because of the S L D group on whom this survey is focussed, 25 have IQ's on the other side of the mean from the RQ's and SQ's, while the remaining 6 have an average deviation from the mean of under 5 points).

AVERAGE SCORES FOR THE THREE GROUPS

TEST	S L D	UA	OTHERS
Number	31	12	37
Mean RQ	81.1	79.2	87.5
Mean SQ	78.2	76.6	82.8
WISC IQ	108.4	101.9	90.5
Tomlinson SS	95.9	90.3	92.5
PAT Listening SS	85.8	88.3	84.1
Backwardness in Reading (100 - RQ)	18.9	20.8	12.5
Backwardness in Spelling (100 - SQ)	21.5	23.4	17.2
Retardation in Reading (IQ - RQ)	27.4	22.7	2.7
Retardation in Spelling (IQ - SQ)	29.9	25.3	7.6

BACKWARDNESS DATA represented in months behind chronological age is as follows -

S L D	Reading	30 months behind CA
	Spelling	23 " " "
UA	Reading	22 " " "
	Spelling	25 " " "
OTHERS	Reading	14 " " "
	Spelling	19 " " "

S2 data only. S1 follow same pattern.

RETARDATION DATA (also S2 only)

S L D	Reading	30 months below expectation
	Spelling	32 " " "
UA	Reading	25 " " "
	Spelling	27 " " "
OTHERS	Reading	3 " " "
	Spelling	8 " " "

SOME SIGNIFICANT DIMENSIONS THAT CHARACTERISE THE GROUPS

		UNDER-ACHIEVERS		
	SLD (31)	SLD (3)	BACKGROUND (9)	OTHERS (37)
Incidence of disordered psychological functions (maximum 7 per pupil)	3.3	2.7	.77	.80
Crossed laterality	65%	67%	33%	24%
Disadvantaged home circumstances	36%	0	89%	27%
Emotional-behavioural problems	32%	33%	33%	13%
Intelligence - low average (IQ 95-86)	10%	100%	0	43%
Intelligence - dull (IQ < 85)	0	0	11%	29%

The "Others" stand out as being somewhat backward but only minimally retarded. In fact, they are a mixed bunch of predominantly slow learners who are making satisfactory progress within their inherent limitations, together with some marginal underachievers usually affected only in spelling. As a group they show only an occasional suggestion of disordered psychological functioning, a low rate of crossed laterality and a very low rate of emotional/behavioural problems.

The characteristics of the S L D pupils are, in part, determined by the selection criteria. They include no dull pupils and only three with IQ's under 95. They show a very high incidence of

malfunction in the psychological processes underpinning the acquisition of literacy. The high rate of crossed laterality tends to confirm its association with the S L D syndrome. The rate of emotional and behavioural problems shows the extent to which frustration in the learning situation impedes social adjustment and personality growth.

The under-achievement group falls into two clusters, viz, 3 pupils whose scores closely resemble the S L D pattern but who were excluded from the S L D category because their IQ's did not match up to the pre-set criteria, and 9 pupils whose outstanding characteristic is grossly disordered home circumstances. The effect of this on their development is such that their good intelligence is either inaccessible to them or not applied to desirable objectives.

The very clear division between the two S L D groups and the rest, on measures of psychological functioning, both explains the high reliability of identification on this survey and promises well for future endeavours to ascertain incidence.

CONCLUSIONS

31 S L D pupils were found, all showing substantial delay in learning relative both to their chronological age and to expectation derived from their measured intelligence, in association with significant measured deficits in one or more of the psychological processes examined. These 31 comprised just under 10% of the pupil population. Boys outnumbered girls 4 to 1 (among the nominations there were 31 girls and 49 boys).

What was all this exploration to lead to?

PART B. THEORY INTO ACTION

Due to staffing difficulties among those who were planning the project, little was able to be done during 1977 but teachers were informed of the strengths and weaknesses that S L D pupils brought to the learning task. Teachers were asked to use a variety of approaches to learning which would allow auditory, visual and tactile channels to be tapped.

At the beginning of 1978 part-time teachers were appointed to each school to work exclusively with these children. However, this did not always occur in one school as several staffing changes at the senior teacher level occurred.

Records were developed showing details of each child at entry to the programme and any further data which had accumulated during 1977 was listed.

The acceptance of this programme for Education Department funding in March 1978 gave the project standing in the schools and allowed the writer to be more precise, even demanding, regarding programmes and method. Unfortunately it did not allow any time for supervision and as a consequence any failure to carry out the programme design is accepted as being wholly attributable to this lack.

Pupils were to be withdrawn individually at first, on a daily basis. Running records were made of reading behaviour and periodic checks were made by taping sessions for subsequent re-play and comparison. These were frequently reviewed by the researcher and discussed with the teacher. Above all, children showing visual perceptual deficits played games which were believed would improve their ability in this field.

At the same time greater emphasis when learning words from the NZCER[39] basic sight word list was placed on auditory discrimination and use of the kineasthetic approach. Similar modifications were made for children with deficiencies in the other modalities. Later when children were to be taught in pairs or in small groups they were grouped according to similar strengths and that mode was emphasised.

Of particular help in training staff was a visit made to Massey University when procedures developed by Messrs McIlroy and Harper were examined and their relevance to this programme evaluated. Later the works of Ken and Yetta Goodman[40] and also of Frank Smith[41] were drawn on to develop a language oriented approach to reading which was to do much to remedy the language deficits of these children.

The programme, with whatever supervision by the writer that could be arranged, continued throughout the year with exceptions and interventions to be mentioned later. Work done with other children is ignored in this paper.

SECTION 4

PRACTICAL PROBLEMS AND INFLUENCES

Three years have passed since a decision was made to examine the backgrounds of a group of children not making adequate progress in the primary school system. It was believed that among the non-attainers there was a significant group whose failure to learn could not be accounted for in terms of native ability, socio-economic deprivation or physical defect.

At the end of two years working with these children a critical assessment of academic gains was made before the bulk of the sample passed to the intermediate school. Some six months later, additional data had been gathered from several sources - the remainder of the original sample in the contributing schools, pupils since added to the programme, children from the sample now at an intermediate school and so no longer part of the programme and a follow-up of pupils who left the programme during the previous two years due to the families leaving the district. Those in the last group have been sought out and provide some sort of a control group.

At this stage it may be said in summary that quite striking results have been attained in many cases. Furthermore, the work done in 1979 showed the greatest returns for reasons which will be examined in detail later. In this section it is intended to comment on the difficulties experienced in obtaining and training staff, of keeping contamination factors to a minimum and of ensuring that changes in school policy did not interfere unduly - in short, of chronicling the research deficiencies inherent in a field study.

The sample, as detailed earlier, was selected late in 1976. In 1977 an additional teacher was appointed to each of the trial schools to enable the programme to proceed. In each case the teacher was young and inexperienced. One school used her to release more experienced staff to work with the children while the other, having no-one particularly competent available used the girl for direct intervention - withdrawal of pupils in the morning and working with them on in-class language programmes during the afternoon.

However, before much could be achieved, staffing difficulties in the district led to these two teachers being absorbed into normal classes and the project was virtually abandoned. There was one difference. The children had been identified as under-achieving - for whatever reason - and the implication for classroom teachers was that they could expect more from each child. Also, as a token, a small number of teacher aide hours was made available to each school to enable extra material to be prepared for these children and/or regular daily reading activities to be monitored by the aides.

Because of changes of staff, and also because the writer and the district psychologist were out of the district for much of the year, the carefully prepared data gathering procedures were not followed. As a consequence it is not possible to say very much about the progress during 1977 other than that the children did little better than to slow their rate of retardation.

The ubiquitous, perhaps even iniquitous Burt test scores however, are available to us. School A with its pupils from a higher socio economic group and a teacher and principal interested in

supporting the project kept Burt R.A. records consistently - indeed too consistently - sometimes tests being administered several times during a twelve month period despite advising them against this practice. From October 1976 to December 1977 the children in this sample gained an average of 1.2 years, the range of gain was .3 years to 3.0 years and the median gain was also 1.2 years. At School B no December scores were recorded but by April 1978 the average gain from October 1976 was 0.96 years, range 0.6 years to 1.5 and median gain 1.2 years.

1978 was a better year. Both schools had staff appointed specifically to work on the project. The research division of the N Z Education Department awarded $1000 for the purchase of materials and recognised the programme as an official research project - Taranaki Research Project - Learning Difficulties. Computer code 6049.[42]

However, this did little to enhance the supervision of the project as the writer continued to work under an extreme work load and the psychological service for this district, establishment of 4, was reduced to one grade II psychologist. Fortunately the principal and senior teacher at School A were growing rapidly in their understanding of the programme and during the course of the year it was arranged for the teachers from the two schools to meet on a regular basis and for the senior teacher from School A to hold a watching brief on the programme in both schools. This was just as well, for the principal of School B was seconded to the Education Department for a period and then won a new appointment, the acting principal who had taken the Massey course on Learning Difficulties left after one term and a competent lady but

with no experience in this area took over the school for the remainder of the year. It is not surprising therefore, to report that within a fortnight of the new attack commencing, several children in the sample were being retained by their class teachers and hard core slow learners substituted. Having discovered and rectified this it was with some disappointment that the writer found early in term 2 that the number of children had been substantially increased - ie, the slow learners as well as the sample were being withdrawn and the teacher was faced with teaching groups of up to 12 at a time. Furthermore, because it suited the school, remedial mathematics was being taught for the first part of the morning and on the one day when the project teacher was there only part time, it was mathematics she taught, not reading or language.

On each occasion, when these matters were raised with the senior staff they were contrite, had not thought it would matter too much and anyway they were working in the interests of children. It has to be agreed they were - within their own viewpoint and limitations.

However, despite these troubles it was possible to restructure the situation and make some real progress during the remainder of the year.

For example, a check of known sight words administered in April 1978 using the NZCER 300 word list exposed eight of the pupils with significant deficiencies. A total of 153 errors were listed or 19.1 per pupil. By December the same eight pupils amassed seven errors, the worst score being two errors.

It is this sort of data which makes field guidance difficult, for these "gains" had been made through drilling words and at

the expense of an agreed approach which emphasised reading and meaning.

Staff training proved to be a difficult area. Only one person - senior teacher, School A, had done any professional study which was relevant in terms of the project. The additional staffing granted this school resulted in a Year 3 teacher being assigned to work with the S L D pupils from 9 to 12 am daily.

School B staffing provided for a recently retrained teacher to work with the children for most of her 20 hours per week in that school.

Base Lines. These were to be determined quickly. Burt Reading Age, basic sight vocabulary using the NZCER Basic Word List of 300 words and current P A Test scores were to be listed. Error analysis was to be recorded as was an assessment of their ability to monitor their own reading behaviour. It was agreed that reading running records would be made regularly (and taped on occasions).

As may be imagined the quality of these records varied markedly and at times claims of great success had to be played down as one convinced the teachers that one could not test on Burt every few months, that one can not compare a Schonell Word Recognition Test score with a Burt and that neither one is comparable with a Holbourn. Such are the problems of a field researcher - one can inform, request, even order that certain things be done in certain ways but teachers have feelings of their own of what is best and there seems little chance that they will follow a particular line unless the supervisor is always available to support them against outside pressures and guide them constantly as the programme develops.

Programme. A language oriented reading programme was instituted but as in the first instance work was to be on an individual basis, instruction would be based using booklets on each child's own interests. The works of Dr Marie Clay[43] and Mr Ken McIlroy[44] were drawn on heavily and it was arranged that the teachers would spend a day at Massey with Messrs. McIlroy and Harper. This was preceded and followed up by several one-day in-service courses conducted by the writer and subsequent irregular meetings, case conferences, parent meetings and senior staff meetings which were held to try and keep the programme on the selected course.

In retrospect the writer believes that despite intensive efforts to play down the phonic element and the mastery of a basic vocabulary and to highlight the syntactic/semantic contextual concept, both teachers, while following the latter approach, continued to emphasise word attack skills, drilled vowel blends and generally promoted their own personal beliefs on how children learn. Spot visits while passing the schools were often disheartening, particularly at School B where one could find pupils cutting and pasting pictures of things to rhyme with "girl", or pupils drawing up lists of words that look like cat. Needless to say nonsense words were being listed, and evidence was found of pupils recording words but being unaware of what the word meant or even on occasions what it was, ie, a mindless exercise developed in which children added the letters of the alphabet, as a prefix or suffix, to given word roots. These they often recorded without even vocalising what was recorded.

Also, because of teacher ineptitude, these lists tended to be marked as right or wrong and the child praised for the number

of correct listings. Therefore, in terms of teacher training, it became necessary to point out that children could have done the same with a set of word roots in, say, German, have vocalised them, even memorised them to the state of instant recall and arranged them in sentence form. However, should the child have then proceeded to "read" there could be no meaning for the reader even if the "sentence" had made sense in German. On reflection, this was probably a turning point - the teacher began to understand the reading process and to realise how her previous understandings and the consequent practices were a hindrance to many pupils.

In School A small groups were able to be formed slowly as children gained confidence. While in groups both individual and group strategies were used. It became common practice for several children to be withdrawn at the same time but for each to be working at "taped" stories, consolidation activities, paired games or reading with the teacher. Children were progressing at a rate which for some would overcome their deficits by the end of the year, others were gaining ground but still two children made only modest gains. Activities accentuating the development of auditory and visual perceptual skills were being maintained at this stage.

As might have been expected by now, in line with other set-backs, the more successful teacher became pregnant and discontinued teaching towards the end of the year. However, she had set up a programme which could be continued and a useful recording system consisting of tapes which the writer could replay, and written accounts of progress - both running and reference point records. Also she had learned to become factual and discriminating in her recorded observations.

It was comments from her which caused the writer to examine new ground further. She had noted that it was children listed as having auditory perceptual deficits who were making better progress than the others, and encouraged the production of more approaches aimed at this area. Results of this effort are recorded later.

At the commencement of 1979 it was decided, because of staffing difficulties, that the School B programme would be discontinued for research purposes although the school was encouraged to continue their efforts. All reading materials and A-V equipment were left in the school for this purpose. Through the Education Department's Regulation 36 provisions it was possible to place a teacher at School A and to maintain her presence throughout the year. This appointment allowed for the release of a teacher with overseas experience which included teaching educationally handicapped children. To this earlier experience, training was added as follows : sessions with the writer, taking of ERIC[45] programme, visit to Massey with other staff to review McIlroy programmes and constant interaction with principal (who gave support) and senior teacher who now had expertise in this area. The writer was frequently consulted during the course of the programme, made regular review visits, was asked to make all decisions related to changes of approach, and controlled all admissions to and discharges from the programme. This year, with this teacher and the type of programme which evolved, considerable changes in children's reading behaviour were achieved leading to some changes of opinion regarding the original hypothesis and proposed programming.

CHANGED APPROACHES

The overview records how practical work in 1977 was virtually impossible and that 1978 saw the remedial programme commence in a more effective manner. A part-time teacher had been appointed to each school to allow the programme to proceed more systematically. During the year events noted in 1977 and early 1978 diverted the writer's attention. Firstly, the work being done in a third school to explore the relationship between agility development and reading competency had been consistently monitored. (See Appendix 5). It soon became clear that all children were improving in physical health, in agility work and in attitudes about themselves. However, those children displaying lack of motor control who were sorted out for additional individual help on the Rachel Brake[46] programme in most cases failed to make other than minor gains in language competency, although due to using differing measurement instruments, some claims were advanced showing a number of children making greater gains. Secondly, scanning of the literature on language disorders brought to light the work of Wiig and Semel[47] of Boston University. Their research on language disabled children and adolescents led them to conclude that the children's language system had not been internalised. They found that learning disabled children characteristically exhibit a number of deficits in sentence processing and comprehension. This they tied in with a belief that auditory perceptual deficits lay at the heart of the problem.

Later the writer's interest in this aspect was reinforced when the district psychologist on his return from Birmingham recounted his interest and that of a number of other researchers in Britain whose work tended to support the idea of auditory perception difficulties being a major cause of language disability.

Using the instrument devised by Wiig and Semel[48] - Test of Linguistic Concepts, the writer during 1978 set out to test the premise that the children in the sample had not internalised the syntax of their language.

The test is constructed to show children's cognition of semantic relations and is similar to the sub-tests in -

. Opposite Analogies sub-test of the Stanford-Binet Intelligence Scale. (Terman and Merrill 1960).

. Auditory Association sub-test of ITPA. (Kirk, McCarthy and Kirk 1968).

. Otis Alpha Short Form sub-test. (Otis 1954)

and is known as Wiig-Semel Test of Linguistic Concepts.

Test items are presented orally to evaluate the comprehension of fifty linguistic concepts requiring logical operations of the fifty sentence items. Ten each represent (1) comparative, (2) passive, (3) temporal-sequential, (4) spatial and (5) familial relationships. The test was designed to (1) control the sentence length to five to seven words, (2) limit the relationship to involve only two critical elements, (3) provide a large ethnic variety of proper names and (4) permit yes/no responses for the majority of the items. The following questions illustrate representative items:

(1) Comparative relationships: "Are watermelons bigger than apples?" (2) Passive relationships: "Jerry was pushed by Bob. Was Bob pushed?" (3) Temporal relationships: "Does Thursday come after Tuesday?" (4) Spatial relationships: "Sally ran in front of Brian. Was Sally first?" (5) Familial relationships: "Give another name for your mother's father". The total Wiig-Semel test is presented as Appendix 2 and is accompanied by a table showing the correct responses of 210 grade school children by grade (nS = 30).

Only two items were deemed atypical for New Zealand children - "Does Thanksgiving come before Halloween?" and "Hal stood in back of Beth. Was Beth in front?" The temporal relationship item was changed to Easter and Queens Birthday and the spatial relationship "in back of" was changed to "at the back of". Although the wide range of ethnic names did not contain any Maori names those used were in all other ways representative of a New Zealand culture.

Perusal of test and sub-test scores will indicate the mean of correct responses by grade and the relevant standard deviations for the American children tested. In brief, total test scores ranged from 26.30. S D 4.99 at Grade I to 46.27. S D 2.00 at Grade 7 - 8.

Armed with this instrument the writer set off to test out the research group for this appeared to be a fruitful avenue. The intention was to set up control groups in both schools and following a period when all children had had a common general approach to the development of adequate reading behaviours to intervene.

The experimental groups were to receive daily instruction along the lines set out in Language Disabilities in Children and Adolescents, to build up auditory perception skills and to assist children to internalise their knowledge of syntax.

It is not the purpose of this essay to determine why these New Zealand children did not conform to American norms. Wiig and Semel claim construct validity was determined by evaluating age differentiation. They state: "As language comprehension skills are reported to be developmental, test scores were expected to show an increase with age. Two hundred and ten

grade school children were randomly selected, thirty each from the first through eighth grades. Analysis of variance indicated significant differences between grades".

The writer decided to start by testing those pupils with the lowest reading performance or those who had made least progress during the previous eighteen months. The tests were administered in early September of 1978 and interventions along the lines mentioned were planned to follow for that third term.

It is sufficient to say that the test was abandoned at an early stage. Pupil No 3 aged 10 and Pupil No 2 aged 11 and both reading several years behind their chronological age came through the test with nearly perfect scores. A quick trip to the other school saw similar results with the children tested with one exception, Pupil No 23 aged 11. With a very limited home background, low attainment levels and poor self image, his scores (16 errors) were at the writer's expectation. However, one case is not sufficient for a trial and also it was noted that for the temporal relationship section he responded "no" to nearly every question but scored only 2 faults. His difficulties were noted and referred to his class teacher.

As a double check it was decided to administer the Record of Oral Language test devised by Dr Marie Clay[49]. See Appendix 3. Similar results are reported.

On the Levels Sentences all children tested moved directly to level 3 and the repetition of Imperatives, Negatives, Phrases and Clauses presented few, if any, difficulties. In the second portion of this test any stumbling was overcome when the child was asked to repeat the parallel example.

As a result of these experiences a decision was made to concentrate on improving reading performance using a language

approach which would concentrate on pupils monitoring their own performance and to abandon any interventions based on perception deficits.

It is believed that by this time so many interventions had been tried that any attempt to identify causal factors would serve no purpose, nor would such identification aid these children in their learning.

For the remainder of the year teachers were to concentrate during the withdrawal periods on building in self correction techniques and encouraging pupils to make sense of material read at all times. At first, teachers were not to comment on acceptable substitutions. Only when pupils felt secure were they to be pointed out and more exact solutions sought, using meaning and a minimum of word attack skills to identify unknown words.

Frequently tape recordings were made of pupils' reading. These were then played back and the child checked his own performance. To help children establish successful monitoring strategies this proved most successful, but was scaled down progressively as more successful behaviours were developed.

Burt reading ages were forbidden, reading progress to be recorded as an accuracy percentage plus number of self corrections noted. This was done by keeping full running records at first and modifying recording as pupils progressed.

By the end of 1978 the following progress was recorded. Table 1 shows School B results for April and December.

TABLE 1 SCHOOL B

		April			December		
Pupil No	Age (Apr)	Burt RA	Acc[x]	S.C†	Burt RA	Acc	S.C.
24	10.7	10.7	9/93	0/10	10.3	9-10/99	3/8
22	10.2	7.9	7.5-8/98	0/3	10.9	10-11/98	3/8
23	11.1	8.4	8/88	1/18	9.7	9-10/97	6/13
19	10.8	8.0	7.5/98	2/5	9.7	9-10	5/8
21	11.3	7.1	7/92	6/18	7.9	7.5-8/98	6/9
29	10.1	7.2	7/99	1/2	8.2	8½/99	0/1
28	9.2	7.5	7/93	1/11	8.7	8.5-9/99	1/2
25	10.0	7.3	7/90	3/18	8.7	8.5-9/99	7/9
26	10.0	7.7	7.5/99	4/5	8.4	8-8.5/98	4/6

x Accuracy is expressed as estimated reading age of material over percentage accuracy.

+ Self correction is shown as number of self corrections over total errors in the passage read.

Table 2 shows School A scores. Insufficient recorded material was available to derive accuracy/self correction data for April 1978 (but 6 monthly Burt scores were available).

TABLE 2 SCHOOL A

Pupil No	Age (Apr)	Burt Nov 77	Burt Apr 78	Burt Dec 78	Acc	S.C.
2	10.8	7.8	8.2	9.4	9/97	1/2
10	10.8	8.6	10.0	11.8	10/98	2/4
5	11.1	8.0	9.6	11.0	P.3.J/99	2/7
3	10.5	7.7	7.9	8.9	8/96	3/5
9	10.5	9.2	10.4	13.1	P.3.J/99	2/3
1	10.4	10.6	11.1	13.1	12/98	1/2
8	11.0	8.6	9.7	10.5	9.5/99.5	1/2
6	10.11	7.9	8.5	11.6	9.5/99.5	5/7
11	10.7	8.6	9.9	10.8	8/97	1/9
14	9.4	8.3	8.6	10.7	9/99	0/4
17	9.7	8.0	8.0	10.6	10/98	1/2
13	9.6	7.7	8.5	9.7	P.3.J/98	1/4
15	9.8	8.0	8.5	10.2	9/99.5	1/4
16	9.11	7.9	9.0	10.1	9.5/99	3/4

The above tables can only be used to note trends. Despite a lot of guidance on the taking of running records the part-time teachers conducting the tests failed to realise that if 96% accuracy is the instructional level to aim for and that 98% can be said to be a very acceptable level of attainment then children scoring at or better than 98% should be tried on more difficult material. This point was made on several occasions, as were comments about use, frequency and decimal point scores in Burt testing but obviously to little avail. Even those in the schools who were directly responsible for supervision would agree on what

such data meant but could be found making similar comparisons. In one school Holbourn tests were also conducted consistently and too often growth would be expressed as Burt 10.4 in April and Holbourn 11.3 in September and claims of great gains made.

At the end of 1978 as these teachers completed their assignments with the project it may be said that the work was worthwhile for the children concerned, that a great deal had been learned about programmes and techniques appropriate to these children and a lot more about teacher idiosyncrasies. The latter points would be carefully considered when preparing for 1979.

SECTION 5

WHAT GAINS WERE MADE

At the end of 1978 of the twenty-three children left in the experimental group of 31 it can be said that 9 children were still retarded in reading. At least 8 were reading in advance of their chronological age and the remaining 6 were reasonably close to their age level. Nevertheless despite the real gains recorded it must be remembered that these were children of average or better intelligence. Pupil No 1 aged 10.10 and IQ 122 was reading 12 year old material fluently and was well on the way to making up his deficit. On the other hand his peers of that ability level were reading well in advance of him.

While this data was being collated an effort was made to trace the remaining 8 children who had left the district. Returns were received in every case. Schools were asked to comment briefly on progress to date, to list PAT percentile ranks where known and to outline any special provisions made for them. Only one child could be said to be making adequate progress. Pupil No 12 (Wisc IQ 115) had PAT percentiles ranging from 76 to 93 and would not be seen as a child needing assistance. Only one of the remaining seven, Pupil No 7 IQ 115, was seen as requiring help. He was being taught in an open plan class and was withdrawn regularly for help. Percentile ranks ranging from 10 to 39 attest to his lack of progress. Other children's scores were also to be found in or close to the lowest quantile with one exception - 80 in listening and another of 59 in mathematics. No special provisions were being made for any of these children nor did the schools see fit to comment on their progress or class programmes. These results, then, do support

the contention that all of the 23 remaining pupils were making progress in excess of similar children being taught in ordinary class programmes.

1979 - THE FINAL YEAR

By this time over half of the children in the original group had left the trial schools. A decision had to be made on whether to follow them up in the intermediate school or to begin again. After analysing the December 1978 results it was decided that there was probably not much more that could be achieved with the nine children still retarded. They were all making real progress and were able to read at least at the 9-year level. (See Table 7). They had developed reasonable attitudes towards themselves and liked reading. They had been selected out for years and seen as different. Now in a new school it was decided to give them a clean break.

Under regulation 36 of the Staffing provisions it was possible to provide additional staffing for specific projects and there was one position available in New Plymouth for the reading project. As an experienced reliever who had been at School A was available a decision was made to start again at that school and to build upon the gains made there the previous year. This teacher with an English background of teaching language disabled children became very skilled in working in the programme. She quickly learned to evaluate children's progress and to assess needs.

As the plan to work on auditory aspects of perception during 1978 had been negated in field trials it was decided that in 1979 nomination for special help in the reading/language field would be made on the same criteria as for 1976 but selection

would be only on the basis of under-achievement. That is not to say that the S L D concept is abandoned, only that no significance has been proved when remedial programmes are being devised for children at this stage. Rather, the importance of a varied presentation of materials to be learned is recognised along with careful recording of and analysis of reading behaviour.

Reading progress was to be recorded as accuracy levels on age-rated material. During visits made throughout the year checks on progress were made. Early in the year Pupil No 14, one of the original selection in 1976 was discharged from the programme as having reached such a high standard that little more could be achieved within the programme. In December 1978 at 9.11 years she was assessed as reading 9-year material with 99% accuracy. In fact she was able to read much better as subsequent tests proved. Accordingly in March as she read 11-year material with few faults, her place was taken by another under-achieving child. This left only four survivors in the programme. Their progress during the year is detailed as follows :

TABLE 3

Pupil No	C.A. Nov 79	Feb	June	Nov	
17	11.0	$\frac{9}{97}$	$\frac{11}{95}$	$\frac{13}{97}$	$\frac{14}{90}$
13	11.0	$\frac{9}{98}$	$\frac{10}{98}$	$\frac{12}{99}$	$\frac{13}{94}$
15	11.1	$\frac{9}{96}$	$\frac{11}{96}$	$\frac{13}{97}$	$\frac{14}{94}$
16	11.5	$\frac{8.5}{96}$	$\frac{10}{95}$	$\frac{12}{99}$	$\frac{13}{92}$

Data is shown as readability level over percentage accuracy. Needless to say Burt R.A. scores are available as well and show similar but not so high a level of reading ability. Emphasis on syntax and semantic cues has obviously paid off while development of successful word attack strategies has been beneficial.

The project is officially at an end now but the work continues. All reading material and A-V material has been left in the schools. The information gained as a result of the trial has been collated and the schools have built into their whole school programmes strategies and techniques found to be useful.

Despite the concentration of effort on School A in 1979, School B have maintained their liaison and interest. As a consequence both schools have developed remedial programmes for use with failing children and assign part-time teaching hours as available towards this area. Perhaps best of all is the interest generated among class teachers who recognise the gains their pupils made in the withdrawal programme and the new understandings about children's learning needs that have been learned.

WHAT HAPPENED AT INTERMEDIATE

In preparing for the transition of the fifteen children to intermediate it was arranged for all material to be made available to the new school. Furthermore, the part-time teacher who was to take a remedial programme in 1979 visited both schools, met the special programme teachers and went through the records and the programmes which they detailed. In line with the policy of giving the pupils a clean start she did not meet the pupils but at the end of her visits she had a clear picture of the children and was in a position to interpret their reading records to each child's class teacher. Also she was well prepared should these children subsequently be presented to her for additional help.

When information about the children's progress at intermediate was sought in July 1979 the following data was collected. The

children had all been seen as coping and so with several exceptions they received no special assistance, such resources as the school had being used on other children who were considered to be more retarded.

Results of Burt Word Recognition testing taken at the time of enquiry (July 1979) are interesting. All except one child had apparently regressed, losses in computed reading age ranging from zero (one case) to 4.3 years, the mean loss being just over 1 year. Even if one were to discount the two extreme scores - 4.3 and 0 years - the mean loss still stands at just under one year. It is tempting to ascribe these losses to lack of specific remedial provisions for these children but before doing so two other facets should be examined.

Teacher bias, albeit unconscious, is well recognised as a test contaminant and in this case the passing out grades from the contributing schools are the higher scores. One could expect the remedial teacher when testing to be lenient when deriving scores and with her great knowledge of and rapport with the children to get the best from them. Test familiarity could also be a factor as scores were derived on Burt at least twice during 1978.

However, when one considers that the intermediate teachers had taught these children for nearly two terms before their testing was completed and also remembering that these teachers were in effect on trial as it was known that the results were required for comparative purposes it is not likely that their testing was more vigorously pursued. Unfortunately no test sheets are available for either set of tests so no further comparisons can be made but perusal of running record sheets on the informal prose inventory tests do suggest some test stress at

intermediate as in every case children read more fluently and with fewer errors as they got into their stories. Also noteworthy is the fact that the lad who lost 4.3 years was immediately tested on a Holbourn and scored 12.6 years which compares well with his running record - 13 year material with 99% accuracy and PAT percentiles C.V.L of 88, 59, 85.

Are there other causes? The writer believes there is one other factor. It will be recalled that both teachers in the 1978 programme had continued a covert word recognition/word attack programme in addition to the language oriented approach agreed to. Could it be that with little emphasis placed on these methods in 1979 that children forgot, or lost some of their ability to identify words out of context. The writer believes this to be the case as the following data may show.

TABLE 4 SCHOOL A

MARCH PAT SCORES

Pupil No	1977			1978			1979 (at Intermediate)		
	C	V	L	C	V	L	C	V	L
8	(Not available)						39	42	50
5	50	32	46	8	23	59	41	30	-
6	13	9	50	8	7	41	58	22	61
9	39	39	78	76	50	71	63	69	75
10	13	11	21	78	29	-	25	38	45
11	16	17	93	20	23	80	29	16	97
1	79	66	85	83	58	99	88	59	85
3	2	2	14	41	23	28	7	2	3
2	42	6	9	31	9	11	-	-	-
	254	182	396	345	222	389	350	278	416
8)	32	23	50	43	28	49	44	35	52

TABLE 5 SCHOOL B

MARCH PAT SCORES

Pupil No	1977			1978			1979 (at Intermediate)		
	C	V	L	C	V	L	C	V	L
24	20	17	1	25	17	32	27	26	30
22	30	9	63	34	26	14	15	34	23
23	27	1	5	19	17	16	18	6	25
21	8	1	29	19	7	37	4	0	29
29	45	21	36	1	4	63	21	19	10
	130	49	134	98	71	162	85	85	117
5)	26	10	27	20	14	36	17	17	23

TABLE 6

MEAN SCORES

	C	V	L	
1977	32	23	50	SCHOOL A
1978	43	28	56	
1979	44	45	52	
1977	27	10	27	SCHOOL B
1978	20	14	32	
1979	17	17	23	

It is believed that the School B programme was heavily biased towards word recognition skills and that the semantic/syntactic cues approach was pursued spasmodically. It was for this reason that when a choice had to be made in 1979 that School A was chosen to continue the trials. On the other hand, the School A programme was truly language based with the teacher only over-emphasising word attack skills almost as an insurance.

Tables 4 and 5 show percentile ranks scored for each child over the three year period. There are several anomalies

apparent for which there seems little chance of explanation. However, when mean scores for these tests are derived an interesting pattern is discerned. For the years 1977-79 (see Table 6) School A comprehension scores show a mean gain of 12 ranks (from 32 to the 44th rank), while School B scores decreased each year dropping from the 26th rank to the 17th.

Reading vocabulary scores show gains in both schools with School A's gain being higher but proportionately much the same as School B.

Considering both schools lay claim to programming to improve listening skills there is little to suggest any great success when one recalls that all pupils were of average or better intelligence.

The point to be made from this is that all children had learned some of the self correction techniques essential to reading and most important, knew that reading should make sense. However, it is believed that the School A pupils had broken through the understanding barrier and now expected to comprehend what they read. Their increasing PAT comprehension scores support this.

It is suggested, then, that the down turn in word recognition scores at intermediate is an example of retroactive inhibition - the demand for meaning in reading now actually handicapping the learner when presented with a previously learned list. This phenomenon was also noted at School A during 1979 when the teacher used the Holbourn test on the remainder of the sample and for this reason its use was discontinued. Frequently errors were made when the tester believed the pupil was using cues from the previous sentences, and of course the test in its totality is devoid of meaning. In other words the

embedding of words in short texts to give meaning to them inhibited these readers who now had expectations of assistance from the passage itself.

Further proof is to be found in perusing the running records of the thirteen children tested by the intermediate teachers. Every child, once settled into the passages, read more fluently and almost faultlessly. (See Tables 7 and 8).

As mentioned earlier the problems of field testing are almost insurmountable. In this case teachers did not always understand what was meant by reading with a percentage accuracy, or else they set great store by their intuition. Frequently when asked to find material read with 96% accuracy they show 98 or even 99% and always of course it is some time later when the writer discovers this and it is too late to re-test. For example, the intermediate records invariably test out at 96-98% accuracy and so one can make a definitive statement about their ability in terms of material of recognised difficulty levels, eg, skylines. 10 - 11 years. However, on every test sheet - even for one child tested on three passages each progressively more difficult, the errors occur before the 10th line of text or else it is an acceptable substitution, eg, Northman for Norseman. This is to say that had the reader's ability been scored once he had got started on the passage it is likely that even greater gains would have been recorded, unless of course the teacher's intuition that the next passage would prove too difficult is right. As they usually didn't try we shall never know!

TABLE 7

RUNNING RECORD LEVELS

SCHOOL A	Dec 1978	July 1979 (at Intermediate)
Pupil No 8	10 yrs 99%	11 yrs 99%
" " 5	10 " 99%	11 " 98%
" " 6	10 " 99%	11 " 96%
" " 9	10-11 " 99%	12-13 " 97%
" " 11	8 " 97%	11 " 93%
" " 1	12 " 98%	13 " 99%
" " 2	9 " 97%	9-10 " 98%

TABLE 8

RUNNING RECORD LEVELS

SCHOOL B	Dec 1978	July 1979 (at Intermediate)
Pupil No 21	8 " 98%	9 " 97%
" " 24	9-10 " 99%	10-11 " 96%
" " 29	8½ " 100%	8½ " 98%
" " 22	11 " 98%	11 " 96%
" " 23	9½ " 97%	9½ " 98%

Considering these children were inadequate to virtual non readers some three years earlier it may be safely claimed that all children have made good progress and most are now reading at approximately their chronological level. Whether they will ever make up the deficit in terms of potential will depend on their own efforts for even those reading in the 9 - 10 year level show by their self correcting strategies that they know what reading is all about.

CONCLUSION

The proposal for consideration in this paper was that language disabled children would make progress if they built up perceptual and motor skills deficits and that teaching strategies should be geared to avoid emphasis being placed on such deficits. It is not possible to say that these deficits were or were not causal factors in the selected children's failure to develop reading and associated language skills. The children selected by definition as S L D proved slower to start to improve and indeed several of the older pupils had not overcome their handicap before leaving the programme. However, all children selected out made significant gains in terms of their previous progress. It may seem surprising then that the decision to further develop the skills-based remedial programmes was abandoned during the second year. It came about this way. As mentioned earlier only limited work was carried out in 1977 on the programme, but at least three other schools in the district had also been interested to try out their theories on why these children had failed to progress. See Appendix 5. Children in School C were identified for special help on the basis of their failure to perform adequately on a series of motor skill activities, but their subsequent lack of success helped the conclusion to be reached that whether perceptual and motor skills deficits have a causal relationship with reading failure, practice in these areas is not an effective remedy.

Coupled with this was the success the selected pupils had when tested on the language development tests.

It is believed that the social interaction of individual and small group teaching plus the feeling that a child's needs are

recognised, even if not understood, was sufficient to give these pupils hope. Careful daily monitoring of progress, done at first on an individual basis, allowed each child to examine his own learning strategy, to build on successful methods and to eliminate counter productive activities.

Although the experiment has now officially ended, the work continues. Teaching strategies found to be so successful with the identified S L D group are used with all retarded readers. While individual programming continues this is taking less of the teacher's time. Greater success is now being found to occur when remedial teaching is undertaken within the classroom for in this way class teachers are enabled to observe the methods used and results gained. Their own teaching methods are subsequently modified and perhaps of even greater importance is that in-class instructional tasks are more carefully geared to the learner's performance level.

APPENDIX 1

SCHOOL A
S.L.D.

PUPIL NO. d.o.b.	C.A.	BURT READING R.A.	R.Q.	SCHONELL SPELLING S.A.	S.Q.	WISC I.Q.	TOMLINSON S.S.	PAT LISTENING S.S.	BACKWARDNESS 100 - R.Q.	100 - S.Q.	RETARDATION I.Q. - R.Q.	I.Q. - S.Q.	VISUAL Discrimination	Memory	AUDITORY Discrimination	Memory	AUDITORY X VISUAL INTG.	VISUAL X MOTOR INTEGRATION	FINE MOTOR SKILL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURAL ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR	HEALTH	MOBILITY OR ABSENCE
STD 2																											
Pupil 1 16.12.67	Boy 8.9	8.0	92	7.9	92	122	115	115	8	9	30	31	+	+	+	+		*	**	*				*			
Pupil 2 14.9.67	Girl 9.0	6.6.	73	6.10	77	95	93	93	27	23	22	18		*		+		*	*	*	*						
Pupil 3 12.12.67	Girl 8.9	6.8	78	6.6	76	94	84	82	22	24	16	18				*	**	*									
Pupil 4 13.10.67	Boy 8.11	7.2	81	7.2	81	115	109	111	19	19	34	34	+	+	+	+		*	**								
Pupil 5 22.3.67	Boy 9.6	7.4	78	6.9	73	107	83	97	22	27	29	34	*	**	*	**		+	+	+							
Pupil 6 23.5.67	Boy 9.4	7.3	78	7.4	80	100	89	97	22	20	22	20		**		+		*	**					*			
Pupil 7 24.9.67	Boy 9.0	7.2	80	7.5	83	115	88	88	20	17	35	32	*	**		*	+	*	*	*	+						
Pupil 8 14.4.67	Boy 9.6	7.1	76	7.2	77	100	84	89	24	23	24	23	+	+	*	**		+	+	*				*			
Pupil 9 23.11.67	Girl 8.10	7.7	88	6.11	78	106	107	115	12	22	18	29	*	*		+		**		*							
Pupil 10 15.8.67	Boy 9.1	6.6.	73	6.10	76	109	96	89	27	24	36	33		*	+	**		*		*						*	
Pupil 11 9.10.67	Boy 8.11	7.2	79	7.6	84	112	110	111	21	16	33	28		*	+	*	+	*									
Pupil 12 29.9.67	Boy 9.0	7.9	88	7.8	87	115	114	109	12	13	27	28	+	+	*	*		*	*	*							
STD 1																											
Pupil 13 27.10.68	Girl 7.11	7.4	94	6.5	82	110	109	123	6	18	16	28		*	*	*	*			*		+				*	
Pupil 14 9.1.69	Girl 7.9	6.5	84	5.7	74	115	87	abs	16	26	31	41			*	*	**	+'	+			+				*	
Pupil 15 23.8.68	Boy 8.1	7.6	94	6.4	79	111	91	101	6	21	17	32	**		**	?	*	+									
Pupil 16 5.5.68	Boy 8.4	7.6	92	6.5	78	109	90	106	8	22	17	31			*	?	**	+	+	*				*	*		
Pupil 17 2.10.68	Boy	7.5	95	6.3	80	125	99	118	5	20	30	45	*	*	*		**	*	*	*			*	*			
MEANS			83.7		79.2	109.4	96.9	102.7	163	202	25.7	29.7															

SCHOOL B
S.L.D.

PUPIL NO d.o.b.	C.A.	BURT READING R.A.	R.Q	SCHONELL SPELG S.A.	S.Q	WISC I.Q.	TOMLINSON S.S.	PAT LISTENING S.S.	BACKWARDNESS 100 -R.Q.	100 + S.Q.	RETARDATION I.Q.- R.Q.	I.Q.-S.Q.	VISUAL Discrimination	Memory	AUDITORY Discrimination	Memory	AUDITORY & VISUAL INTEGRATION	VISUAL & MOTOR INTEGRATION	FINE MOTOR SKIL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURE ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR HEALTH	MOBILITY OR ABSENCE
STD 2																										
Pupil 18 14.3.67	Boy 9.6	6.6	69	6.8	71	96	87	95	31	29	27	25	+			**	+			*	*	*		*		
Pupil 19 22.8.67	Boy 9.1	6.8	75	6.6	73	115	100	97	25	27	40	42	+	+	*	**			*	*	*			*		
Pupil 20 12.12.67	Boy 8.10	7.2	81	7.10	89	109	103	95	19	11	28	20	*		+	+		**	*				*		*	
Pupil 21 16.1.67	Girl 9.8	6.5	67	6.4	66	100	88	84	33	34	33	34	**	**		+	*	**	**			*				
Pupil 22 19.2.68	Boy 8.7	7.0	80	6.5	75	122	100	86	20	25	42	47		*	+	+			**	*	*	*				
Pupil 23 11.2.67	9.8	7.3	75	7.11	82	105	83	78	25	18	30	23	+	**		**			**			*		*		
Pupil 24 29.9.67	Boy 9.0	7.2	80	7.1	79	104	101	abs.	20	21	24	25	*			**		**	*	*		*				
STD 1																										
Pupil 25 20.4.68	Boy 8.4	6.4	76	6.0	71	89	104	91	24	29	13	18	*		**	*	**			*	**					
Pupil 26 5.4.68	Boy 8.3	6.6	80	5.5	66	96	85	abs	20	34	16	30	**				**	*	*	*			*			
Pupil 27 14.7.68	Boy 8.3	6.8	82	6.11	83	115	114	113	18	17	33	32	+	*	*	**			*	*		*				
Pupil 28 3.3.69	Boy 7.7	6.3	83	6.1	80	120	87	88	17	20	37	40		*	*	**	**		*	*		*	*			
Pupil 29 20.3.68	Girl 8.6	6.3	73	6.0	70	116	86	abs	27	30	43	46	*	**	*	*	**	*	*	*		*	*			
Pupil 30 6.7.68	Boy 8.3	6.6	80	7.0	85	99	91	77	20	15	19	14	*			**			**			*				
Pupil 31 4.9.68	Boy 8.1	7.1	89	7.0	88	115	96	113	11	12	26	27	+			*	**			*				*		
	MEANS		77.9		77.0	107.2	94.6	92.5	22.1	23.0	29.4	30.2														

SCHOOL A/SCHOOL B
SEVERE U/ACHIEVERS
BUT NOT SLD

PUPIL NO d.o.b.	C.A.	BURT READING R.A.	R.Q.	SCHONELL SPELLING S.A.	S.Q.	WISC I.Q.:	TOMLINSON S.S.	PAT LISTENING S.S.	BACKWARDNESS 100 - R.Q.	100 - S.Q. RETARDATION I.Q. - R.Q.	I.Q. - S.Q.	VISUAL Discrimination	Memory	AUDITORY Discrimination	Memory	AUDITORY X VISUAL INTG.	VISUAL X MOTOR INTEGRATION	FINE MOTOR SKILL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURAL ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR	HEALTH	MOBILITY OR ABSENCE	
SCHOOL B(N=7)	STD 2																										
Pupil 32 19.6.67	Girl 9.3	7.2	77	8.5	91	117	103	65	23	9	40	26	+	+	+		+	+			?	?	*				Background
Pupil 33 3.12.67	Girl 8.10	7.0	79	7.5	84	115	87	78	21	16	36	31				+					*	*	*				Background
Pupil 34 23.4.67	Boy 9.5	7.5	79	abs.		abs	94	-	21	-	-	-	-	-	-		-	-	-	-	-	*	*				Compare Sister
STD 1																											
Pupil 35 7.6.68	Girl 8.2	7.1	87	6.6	80	99	87	-	13	20	12	19	*		*		*	*		*		*	*				Background
Pupil 36 16.7.68	Girl 8.2	6.9	84	7.6	93	106	96	88	16	7	22	13					+			*	*	*	*				Background
Pupil 37 4.8.68	Boy 8.1	7.0	86	6.0	74	110	110	92	14	26	24	36					*	+		*		*	*	*			"
Pupil 38 1.12.68	Girl 7.10	5.8	73	5.7	72	100	90	79	27	28	33	34				+	*	+			*	*	*	*			Background
SCHOOL A(N=5)																											
STD 2																											
Pupil 39 5.3.67	9.6	7.3	77	7.4	78	116	99	113	23	22	39	38	+			+		+			? No disabilities						*
Pupil 40 18.9.66	Boy 10.0	6.8	68	7.4	74	83	65	80	32	26	15	9				*	Adjustment Class?					*	*				
STD 1																											
Pupil 41 23.7.68	Boy 8.2	6.9	84	5.6	68	94	99	89	16	32	10	26						*		*	Below Av & SLD						*
Pupil 42 23.7.68	Boy 8.2	6.6	80	5.5	67	89	76	99	20	33	9	22		*			*	*		*	"		"	"			
Pupil 43 17.12.67	Boy 8.9	6.6	76	5.4	62	86	77	100	24	38	10	24	*	*	*		*		Below Av. & SLD								
	MEANS		79.2		76.6	101.9	90.3	88.3	20.8	23.4	22.7	23.3															

SCHOOL B
- OTHERS

PUPIL NO d.o.b.	C.A.	BURT READING R.A.	R.Q.	SCHONELL SPELLING S.A.	S.Q.	WISC I.Q.	TOMLINSON S.S.	PAT LISTENING S.S.	BACKWARDNESS 100 - R.Q.		RETARDATION I.Q. or R.Q. - S.Q.		VISUAL Discrimination	Memory	AUDITORY Discrimination	Memory	AUDITORY X VISUAL INTG.	VISUAL X MOTOR INTEG.	FINE MOTOR SKILL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURAL ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR	HEALTH	MOBILITY OR ABSENCE
STD 2																											
Pupil 44 27.1.68	Girl 8.8	8.1	92	8.2	93	?	89	100	8	7	-	-	Satisfactory								+	*		+			
Pupil 45 5.9.67	Girl 9.0	6.8	76	7.2	80	81	101	86	24	20	5	1	Slow Learner														
Pupil 46 26.7.67	Girl 9.2	7.3	79	7.4	80	abs	92	74	21	20	-	-	Slow Learner ?														
Pupil 47 27.2.68	Girl 8.7	6.7	77	6.10	79	87	87	65	23	21	10	8	Slow Learner						*					*		*	*
Pupil 48 11.12.67	Girl 8.10	6.9	78	7.10	89	91	85	84	22	11	13	2					*			*	Marginal U/Achiever						
Pupil 49 17.3.67	Boy 9.6	7.1	74	7.7	80	83	86	72	26	20	9	3	Slow Learner														
Pupil 50 26.3.68	Boy 8.6	7.9	92	8.1	94	110	101	104	8	6	18	16		*		Marginal U/Achiever											
Pupil 51 8.10.67	Girl 8.11	7.3	81	-	-	abs	93	77	19	-	-	-				Slow Learner?											*
Pupil 52 20.1.68	Girl 8.8	7.6	86	7.0	80	91	90	95	14	20	5	11					*		Slow Learner								
STD L																											
Pupil 53 11.8.68	Girl 8.1	6.6	81	6.2	77	80	94	79	19	23	-1	3								*	Slow Learner						
Pupil 54 26.4.68	Girl 8.3	6.9	83	7.7	93	77	80	78	17	7	-6	-16					*	*		Doing very well -S/Lnr.							
Pupil 55 29.11.68	Girl 7.11	6.4	81	6.2	78	85	89	82	19	22	4	7			*	*		*	Slow Learner								
MEANS			81.7		83.9	87,2	90.6	850	18	316.1		7,13.9															

SCHOOL A
- OTHERS

PUPIL NO d.o.b.	C.A.	BURT READING R.A.	R.Q.	SCHONELL SPELLING S.A.	S.Q.	WISC I.Q.	TOMLINSON S.S.	PAT LISTENING S.S.	BICKWARDNESS 100 - R.Q.	100 - S.Q.	RETARDATION I.Q. - R.Q	I.Q. - S.Q.	VISUAL Discriminat.	Memory	AUDITORY Discriminati	Memory	AUDITORY X VISUAL INTG.	VISUAL X MOTOR INTEGRATION	FINE MOTORSKILL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURAL ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR	HEALTH	MOBILITY OR ABSENCE
STD 2 (N=25)																											
Pupil 56 28.3.67	Girl 9.7	7.7.	80	7.5	78	87	98	-	20	22	7	9	Background				+			*						*	
Pupil 57 28.3.67	Girl 9.7	8.1	84	7.4	77	-	95	-	16	23	-	-	Background							*		*				*	
Pupil 58 29.3.68	Boy 8.6	8.4	99	7.9	93	-	111	-	1	7	-	-	Returning to Australia													*	
Pupil 59 7.2.67	Girl 9.8	7.7	79	7.8	80	80	69	74	21	20	1	-	Slow Learner				+					*					
Pupil 60 2.10.67	Boy 9.0	7.8	88	7.8	89	95	86	86	12	11	7	6	Marginal U/Achiever												*		
Pupil 61 23.7.67	Boy 9.2	7.3	79	7.8	85	87	75	83	21	15	8	2	Marginal U/Ach.				+	+		*	*						
Pupil 62 30.5.67	Girl 9.4	7.6	82	7.8	84	94	94	79	18	16	12	10					*	Returning to Australia									
Pupil 63 23.4.67	Girl 9.5	8.3	87	8.1	86	91	-	-	13	14	4	5	Slow Learner														
Pupil 64 30.11.67	Boy 8.10	7.1	81	6.11	78	88	93	77	19	22	7	10		*		*		*	S/Learner		*						
Pupil 65 21.1.68	Girl 8.8	6.5	75	5.4	62	79	78	79	25	38	4	17				*	*	*	Near Special Class								
Pupil 66 13.8.68	Girl 8.1	7.0	86	6,2	77	90	78	79	14	23	4	13		*		*	*	*	* Spelling help *								
Pupil 67 21.8.67	Girl 9.1	7.8	86	7.2	79	91	86	-	14	21	5	12					*		slow learner								
Pupil 68 25.3.68	Boy 8.6	8.5	100	7.6	89	109	111	-	0	11	9	20	Spelling help					*	Marginal U/Achiever								
Pupil 69 2.6.68	Girl 8.3	7.4	90	6.8	83	90	97	106	10	17	0	7							*	Spelling help.							
Pupil 70 14.6.68	Boy 8.3	7.7	94	7.6	93	104	112	106	6	7	10	11								* Marginal U/Achiever							
Pupil 71 23.10.68	Boy 7.11	7.2	91	5.9	73	76	104	82	9	27	15	3		*		*	+		*	Spelling help							

SCHOOL A (cont.)
- OTHERS

NAME d.o.b.	C.A.	BURT READING R.A.	R.Q.	SCHONELL SPELLING S.A.	S.Q	WISC I.Q.	TOMLINSON S.S	PAT LISTENING S.S.	BACKWARDNESS 100 R.Z.		100 - S.Q. RETARDATION	I.Q. - R.Q.	I.Q. - S.Q.	VISUAL Discrimination	Memory	AUDITORY Discrimination	Memory	AUDITORY X VISUAL	VISUAL X INTG.	INTEGRATION FINE MOTOR	SKILL	CROSSED LATERALITY	LANGUAGE EXPERIENCE	CULTURAL ATTITUDES	DOMESTIC SITUATION	EMOTIONAL STATUS	BEHAVIOUR	HEALTH	MOBILITY OR ABSENCE
STD 2																													
Pupil 72 2.7.68	Boy 8.2	7.4	90	5.7	70	81	79	97	10	30	-9	11				*		*					*						
Pupil 73 15.1.69	Boy 7.8	7.7	99	6.4	82	86	96	109	1	18	-13	4				*		*	+										
Pupil 74 1.3.69	Boy 7.7	8.3	109	7.2	95	120	124	109	-9	5	11	25		Spelling help															
Pupil 75 13.10.68	Girl 7.11	7.6	96	6.8	86	91	92	84	4	14	-5	5				*			+			*							
Pupil 76 14.10.68	Boy 7.11	8.1	103	6.9	87	96	89	80	-3	13	-7	9	+			*			*		*								
Pupil 77 9.5.68	Boy 8.4	7.0	84	6.4	77	81	74	99	16	23	-3	4				?		*	*			*							
Pupil 78 15.3.69	Girl 7.6	8.7	116	7.4	99	125	122	115	-16	1	9	26	+					+	+		Marginal Underachiever								
Pupil 79 13.11.68	Girl 7.10	6.4	82	5.6	72	81	78	79	18	28	-1	9						*	+			*							
Pupil 80 28.8.68	Boy 8.1	7.9	98	6.8	84	89	101	-	2	16	-9	5		Spelling help															
	MEANS		90.3		82.3	91.8	93.4	84.8	9.7	17.7	1.6	10.1																	

APPENDIX 2

APPENDIX 2

.....(name)

WIIG-SEMEL TEST OF LINGUISTIC CONCEPTS

Comparative relationships:

1 Are watermelons bigger than apples?
2 Are jets slower than turtles?
3 Are trees smaller than flowers?
4 Are trains faster than airplanes?
5 Are parents older than their children?
6 Are lemons sweeter than candy?
7 Is ice cream colder than coffee?
8 Is night darker than day?
9 Are feathers heavier than books?
10 Is water wetter than snow?

Passive relationships:

1 John was hit by Eric. Was John hit?
2 Bill was caught by Tom. Was Tom caught?
3 Jerry was pushed by Bob. Was Bob pushed?
4 Judy was pulled by Sue. Was Judy pulled?
5 Betty was brought by Ruth. Was Betty brought?
6 Mary was driven by Alice. Was Alice driven?
7 Pearl was phoned by Fran. Was Fran phoned?
8 Don was upset by Jane. Was Jane upset?
9 Paul was chosen by Steve. Was Paul chosen?
10 Ann was left by Kate. Was Ann left?

Temporal relationships:

1 Does lunch come before breakfast?
2 Does evening come before afternoon?
3 Does dinner come before lunch?
4 Does noon come after morning?
5 Does Saturday come before Sunday?
6 Does Thursday come after Tuesday?
7 Does summer come after spring?
8 Does Thanksgiving come before Halloween?
9 Does May come after June?
10 Does December come before November?

Spatial relationships:

1 Pat came after James. Was James first?
2 The elephant sat on the mouse. Was the mouse on top?
3 Sally ran in front of Brian. Was Sally first?
4 The chair fell on the toy. Was the chair on the bottom?
5 Philip rode behind Charles. Was Philip last?
6 Leslie swam between Burt and Angel. Was Angel in the middle?
7 Sharon finished before Henry. Was Henry last?
8 The ball rolled to the left of the fence. Was the ball on the left side?
9 Hal stood in back of Beth. Was Beth in front?
10 Mike walked to the right of Joe. Was Joe on the right side?

Familial relationships:
(Demonstration: What do you call your mother's mother?)

1 Give another name for your mother's father.
2 Give another name for your father's father.
3 Give another name for your father's mother.
4 Give another name for your mother's brother.
5 Give another name for your mother's sister.
6 Give another name for your father's brother.
7 Give another name for your aunt's daughter.
8 Give another name for your uncle's son.
9 Give another name for your aunt's son.
10 Give another name for your uncle's daughter.

CORRECT RESPONSES TO LOGICO-GRAMMATICAL SENTENCES BY 210 GRADE SCHOOL CHILDREN BY GRADE (nS = 30)

Relationship		Grade						
		1	2	3	4	5	6	7-8
Total test	M	26.30	34.90	37.13	41.06	45.40	46.97	46.27
	SD	4.99	4.76	6.14	3.99	3.86	2.06	2.00
Comparative	M	7.70	8.10	8.50	8.67	9.47	9.60	9.40
	SD	1.55	1.33	1.28	1.38	0.72	0.61	0.55
Passive	M	6.60	7.80	7.83	8.37	8.67	9.17	9.00
	SD	1.43	1.64	2.03	1.28	1.47	0.90	1.03
Temporal	M	6.50	6.53	6.77	7.60	8.73	9.07	8.73
	SD	1.50	1.83	1.75	1.33	1.41	0.82	0.99
Spatial	M	4.73	7.23	8.13	8.60	9.17	9.43	9.27
	SD	2.06	1.52	1.43	0.99	1.10	0.92	0.73
Familial	M	1.43	5.23	5.97	7.83	9.07	9.70	9.87
	SD	1.50	2.92	2.98	2.68	2.21	0.74	0.43

APPENDIX 3

Class:..... School:..... Child's Name:.....

Date of Birth:..... Date: ..... Age:.....

Recorder:.....

The Levels Sentences

Level 2 Part 1.
TYPE

A *That big dog over there* is going to be *my brother's.* ☐

B *The boy by the pond* was sailing *his boat.* ☐

C *The bird flew* to the top of the tree. ☐

D *For his birthday* Kiri gave him *a truck.* ☐

E *Can you see what is climbing up the wall?* ☐

F *Here comes a big elephant* with children sitting on his back. ☐

G *My brother turned the radio up* very loud. ☐

Level 2 Part 2.
Type

A *That old truck in there* used to be *my father's.* ☐

B *The cat from next door* was chasing *a bird.* ☐

C *The dog ran through* the hole in the fence. ☐

D *For the holidays* Grandpa bought us a ball. ☐

E *The boy saw* what the man was doing *to the car.* ☐

F *There is my baby* riding in his pushchair. ☐

G *The girl threw her book* right across the room. ☐

Total for Level 2 ☐

Enter 14 on the next page if all Level is credited.

Level 1 Part 1.

Type

A *My brother's knees are dirty.* ☐

B *Pussy* is drinking *some milk.* ☐

C *Sally* is staying *at home.* ☐

D *John* is buying me *a boat.* ☐

E *I know* he's in there. ☐

F There's another fire engine. ☐

G *She's driving her car* quickly. ☐

Level 1 Part 2.

Type

A *My father's radio* is broken. ☐

B *Sally* is riding *her bike.* ☐

C *Mary* is going *to town.* ☐

D *Mary* is giving me *a book.* ☐

E *I guess* we're lost. ☐

F Here are some more fish. ☐

G *He's playing his radio* very loud. ☐

Total for Level 1 ☐

Level 3 Part 1.

Type

A *Be as quiet as you can* when your father's asleep. ☐

B *My aunt and uncle* want to start building *a new house.* ☐

C *The two cars* drove along the road *for a long time.* ☐

D *The shopkeeper* sold my mummy *some fresh cream.* ☐

E *The girl saw* who her mother *was giving the cakes to.* ☐

F. *There are the books* that you were reading *at my place.* ☐

G *My mother* usually puts the cat *under the house* at night. ☐

Level 3 Part 2.

Type

A Be very careful swimming when there's a big wave. ☐

B *That dog and the one next door* like to chase *the postman.* ☐

C *All the children talked loudly to each other at the table.* ☐

D *The new teacher* read our class *a fairy story.* ☐

E *The teacher knows* how much wood we will need *for the house.* ☐

F *There goes the fireman* who put out the fire *in the factory.* ☐

G *My brother* often puts some bread outside *for the birds.* ☐

Total for Level 3 ☐

Level 1 ☐

Level 2 ☐

Grand Total ☐

APPENDIX 4

APPENDIX 4

SCREENING TEST

FOR USE WITH ALL CHILDREN

AT POINT OF SCHOOL ENTRY

Explanatory Note:

It is suggested that this check list be completed on all children within 2 or 3 weeks of entry to school, as soon as the teacher feels familiar enough with the child to be in a position to accurately comment.

The check list will, in a very broad way, identify children who may fail to make normal progress academically for a variety of reasons. (eg, cultural disadvantage; emotional disturbance; slow overall development; perceptual, motor or auditory difficulties).

To complete the check list, put a tick (✓) opposite any statement that appears to be true for the child in question and transfer the totals for each subsection to the box at the top right hand corner. If part of an item is a fair description and part is not, give the statement a tick, but put a line through the words that do not apply.

When the number of ticks in any section is 3 or more, or the combined total exceeds 9, it is possible that the child may experience learning difficulties. He may, therefore, require extra specialised educational help and assistance from the earliest stages of his schooling.

A more precise assessment of the specific areas contributing to the child's learning problems would require the administration of the Sheppard Test, or, alternatively, the check list results could be discussed with a member of the advisory or psychological service team.

NEW ENTRANT CHECK LIST

NAME:

D.O.B:

PLACE IN FAMILY:

DATE OF ADMISSION:

DATE OF COMPLETION:

Motor Skills	_____
Expressive Language	_____
Understanding of Language	_____
Behaviour Patterns	_____
	_____
TOTAL	_____

Motor Skills:

( ) Is ambidextrous, using left hand for some activities, right hand for others; or uses left hand exclusively.

( ) Has difficulty in hopping with either foot.

( ) Slow and fumbling putting on shoes, coat etc.

( ) Awkward in running, or in throwing and catching a ball.

( ) Clumsy in manipulating materials, hammering nails.

( ) Has difficulty using scissors.

( ) Painting lacks recognisable object or shapes - mere blobs and lines.

( ) Cannot keep within lines when colouring.

( ) Cannot copy own name, reverses letters of similar shape ie, p, b, d, or prints from R to L instead of left to right when he writes his own name.

Expressive Language:

( ) Has difficulty in pronouncing many sounds - d, t, k, g, s, v, gr, bl. (circle those which apply).

( ) Speech is in single words or telegramatic.

( ) Grammar is defective - "I done it", "She taked it" - "mouses" etc.

( ) Gets into knots on long words.

( ) Has difficulty ordering thoughts when describing a situation or event.

( ) Loses main thread or "gabbles on" at length.

( ) Cannot count to 5.

( ) Cannot count to 20.

( ) Rarely speaks except in reply to demands.

...

Understanding of Language:

( ) Seems not to understand instructions, often bewildered or "lost".

( ) Attention quickly wanders at storytime.

( ) Cannot reliably name colours.

( ) Has unusually limited vocabulary.

( ) Cannot think in terms of opposites - thick/thin, rough/smooth, more/less.

( ) Has unusually limited knowledge concerning everyday things.

( ) Has unusually limited recall of nursery rhymes and stories.

( ) Sometimes fails to discriminate similar words - peg/beg/bag/egg.

( ) Cannot repeat a list of 4 familiar objects in correct order, eg, cup, field, lorry, fish or John, Michael, Tony, Kevin.

Behaviour Patterns:

( ) Is very dependent on adults, cries easily or is very timid.

( ) Apathetic, seemingly content to do nothing.

( ) Always on the move, constantly fidgets and squirms.

( ) Distractible; keeps flitting to something new.

( ) Explosive; loses self-control if task proves difficult or some mishap occurs.

( ) Very variable in his behaviour, often very good, sometimes awful.

( ) Does not play happily with a group of children; fails to live by the rules of the game.

( ) Never shows prolonged concentration, even on a self-chosen task.

( ) Frequently loses belongings or gets lost.

APPENDIX 5

APPENDIX 5

EARLY DISTRICT INTERESTS

The antecedents which led to the selection of two local schools for the field experiments are chronicled below. Wide interest in disabled learners had been aroused and several school principals were actively exploring strategies to meet the needs of those children who concerned them greatly.

The following brief descriptions of school activities will indicate some of the local interests -

School B. Observation of low attendance figures each winter led the principal to seek assistance from the physical education adviser. A fitness programme based on individual performance was developed that incorporated the sequential development of agility skills which increased in complexity and number as skills and stamina increased. The programme was designed to be carried out every day and completed in 10 - 15 minutes elapsed time. As expected, personal health improved. Colds were much less prevalent but attendance was not just maintained - it improved beyond the normal summer figures.

A further bonus was reported as teachers noted changes in pupils' attitude to other aspects of school work. Was increasing physical and manipulative ability leading to greater facility in reading, writing and maths? And if so, could this be attributed to better all round health, better attitudes to school, or had some necessary skills been developed through physical attainment? They sought the advice of the psychological service.

School C, a rather large school in a rural town had additional staffing allocated to assist programming for a large number of low achievers. One of the senior teachers had heard of the then district psychologist's trial screening tests. (Appendix 4). Alerted to the possible effects of deficient motor responses in learning failure, he sought the writer's advice.

He had already selected parents to visit the school daily to supervise some 250 junior pupils as they ran through a series of physical activities. Any child failing the activity was screened out for special educational help.

Modifications as follows were suggested -

1 That the activities be performed over a set period, say one week, rather than changed almost daily.

2 That a simple recording system be devised to indicate when the skill was mastered - this allowed for many to learn a skill they had never ever tried. Cyclostyled lists of names were prepared for each activity and the day's number entered beside each child's name as the skill was attained.

3 For a trial period this data was transferred to a master record each week.

Results:

(1) School norms were established for each activity - the number of days it took for 50% and again for 75% of the group to pass any item.

(2) Children displaying poor motor co-ordination etc were easily identified - generally those who were still failing after five days of instruction and practice,

although some skills mastered by most on day one or two, were deemed as failed if four or five days were needed.

(3) Separate from this chart, were lists of children who were making (a) no significant progress in reading and language; (b) slow progress and (c) high progress in these same areas.

(4) These were matched to the agility chart and a positive but low correlation could be made between non-achievers, low progress and high progress pupils in terms of the motor skills tests. In only one case was a girl identified as having a serious deficiency in the motor skills but who was making more than adequate progress. Low progress pupils who also "failed" gross perceptual/motor activities were singled out for individual teaching by volunteers using the Rachel Brake programme. Appendix 6.

A recent re-assessment of this programme resulted in the following findings -

The physical education programme based on daily practice of sets of programme agilities involving balance, rhythm, motor control and co-ordination is continuing. Marked progress is made each week as children practise the skills, most of which are mastered by the third day by all children (and supervising mothers who enjoy the involvement). It is hoped to transfer the whole programme to an afternoon time slot and to continue it because of the increase in physical fitness and skill development. Any association with reading improvement is believed to relate to a consequent well-being resulting from

better health and the social acceptance from peers due to increased competence in physical endeavours.

The Rachel Brake programme for children believed to be at risk is continuing and many children benefit from the regular one to one relationship with the tutor, the practising of co-ordination skills and the acquisition of language through discussion.

It is not possible to say more than this for the keeping of records has largely been discontinued and the type of record and nature of comments made by monitoring mothers are subjective and lack precision. It should also be noted that during the time this programme has been running there have been three different teachers responsible for its supervision and numerous changes of teaching staff.

School D - again a large school in a rural town, had evidence of lack of attainment in formal education. Over the years theories had been posed as to causation. Popular belief among teachers was that local children scored on average 10 - 12 IQ points below pupils in other schools. A local general practitioner, gynaecologist and paediatrician, conducted many experiments on blood sugar levels at birth and related these to subsequent development - or lack of it. Three cases of anencephaly were discovered there in one year recently, and the district psychologist has commented on the atypical nature of the cases he sees there.

To this area came a new principal whose MA thesis was on Gifted Children. Following a settling in period he too decided to try to explain what was happening. His approach was one of

testing pupils' visual and auditory discrimination skills, manipulative abilities and knowledge of what is relevant in a child's world.

School A - a large New Plymouth school with a very experienced staff and a good record of academic achievement were casting about for methods and procedures to help those who appeared to be making less than adequate progress. They contacted School B at about the same time that School B had asked the psychological service for advice.

There is nothing in the foregoing to suggest that anybody had any answers. In fact, at that stage no-one was even sure what questions to ask. However, it is plain that there were many people concerned for pupils whose progress needed more than the normal evaluation procedures and there were people with some professional abilities who were prepared to give of their time. Perhaps it was because of rather than in spite of staff shortages in the local psychological office - one and later two vacancies in a staff of four - that any attempt was made to co-ordinate this interest and concern.

A three pronged attack was launched. Psychological staff using recent films on the education of learning disabled youngsters, directed the staff of many schools to think about such children and to try anything that seemed worthwhile to help children who appeared to exhibit these traits. Secondly, several schools were selected where the new entrant screening device was to be refined and documented. This instrument has continued to be used in three large schools where it was first trialled. It has been interesting to find that the ST(JC's) long after they were asked to participate for a specified time feel that

the information gained is valuable enough to continue to use the device. Unfortunately no evidence has been sighted which suggests that any specific deficits are being remedied. Rather it is used as justification of the continuation of general skills teaching within the developmental period.

APPENDIX 6

APPENDIX 6

DEVELOPING PREREADING SKILLS

- Rachel G Brake, Ed D

The programme grew out of a research project that proposed two hypotheses: (1) The incidence of first reading failure can be reduced in potential reading failures are identified in kindergarten, and (2) Appropriate intervention is possible with children before they fail. Emphasis throughout is on success.

In classrooms where the materials were developed and field tested the teachers reported that children made tremendous growth developing prereading skills and have been experiencing success in school.

The prereading programme consists of over 240 lessons on individual cards. Each card presents a single prereading skill and a procedure to develop it. The major areas developed were chosen because weakness in these areas has been shown to have a high correlation with reading failure. See Katrina de Hirsch, Jeannette Jansky and William Langford, Predicting Reading Failure (New York: Harper and Row), 1966 -

AUDITORY DISCRIMINATION: Simple activities begin with distinguishing common noises and locating sources of specific sounds. As auditory acuity develops, children listen for sounds while soft music is playing so they may distinguish figure from ground. More complex skills, such as rhyming, lead directly to reading instruction.

AUDITORY MEMORY: These activities range from repeating simple sentences to reciting poems and retelling stories. Research shows that ability to say simple poems and nursery rhymes is an indication of readiness for reading.

EXPRESSIVE LANGUAGE: Suggestions are made for ways to involve children in talking and listening. Children are asked to describe objects, invent puppet shows and verbalise their feelings. Facility with language is a direct result of opportunities to converse with other people.

FINE MOTOR SKILLS: Not all children have ample opportunity to develop fine muscle coordination. Folding, cutting, and handling small objects all help a child gain control of his small muscles and foster prewriting skills.

GROSS MOTOR SKILLS: Simple activities begin with walking forward and backward, negotiating an obstacle course, and throwing at a target. Children who appear awkward and have difficulty performing skills such as skipping frequently experience difficulty in beginning reading.

KINESTHETIC MODE: Exercises in this area of development include moving the body rhythmically, using the muscles to perform physical tasks, and manipulating the body in various directions. Ease of movement may be an index of a child's level of development.

LOGICAL THINKING: Making associations, forming classifications, arranging a series, and recognising cause and effect cut across the disciplines. These activities will help a teacher diagnose a child's ability to conceptualise.

SPATIAL RELATIONS: Research shows that many young children are unfamiliar with the names and relative positions of their body parts. These children have not clearly established the right or left side as dominant and they have difficulty following directions involving turning right or left. They

seem not to know where they are in space. Children profit from ample opportunity to develop their body images and acquire a sense of directionality.

TACTILE DISCRIMINATION: A child's sense of touch is an important learning aid. This sense is heightened as he identifies objects by touching them with his eyes closed. Some children learn the letters of the alphabet by feeling the shapes in a rough texture or by having someone write the letters on their backs.

VISUAL DISCRIMINATION: The ability to observe detail visually is an important prerequisite for learning to read. Children begin by observing gross differences in objects then gradually distinguish less obvious details.

VISUAL MEMORY: Recall of what one has seen is also a valuable prereading skill. Exposing objects to children then asking them to recall what they have seen is related to successful recognition of words and remembering spelling patterns.

Each lesson follows a simple format:

BEHAVIOURAL GOAL: A clear statement of what the child is to do.

MATERIALS NEEDED: A list of what is required to perform the activity.

PROCEDURE: A description of the teacher-pupil activity.

EVALUATION: A means of deciding whether the goal has been reached. Some of the lessons provide:

VARIATIONS: A listing of additional materials or procedures

that may be used to attain the same goal.

SUPPLEMENTARY ACTIVITIES: A listing of follow-up activities that may provide practice or give the child something interesting to do while using the skill. The lessons are colour coded by category and stored in a card file. The cards are numbered and sequentially because the activities within the categories range from simple to more complex. Cards may be added to expand categories.

The cover card in each category provides a list of skills to be fostered and points to evidences of weakness to guide the teacher in her diagnosis and prescriptive use of the programme.

Teachers and paraprofessionals are urged to use the programme prescriptively. If a child indicates that he has no difficulty with tasks in a particular category, he should not waste his time with the exercises. On the other hand, if a child is experiencing difficulty with certain lessons, the teacher/paraprofessional should be sure that he experiences some success before ending the activity. For example, if, in the auditory discrimination category, he cannot hear the difference between the beginning sounds of 'big' and 'pig', the teacher/paraprofessional should turn back to a much simpler level of skills where he needs to discriminate between gross differences in sounds such as those made by a pencil and a book dropped on the floor. Priority should be given to the area of greatest weakness. The teacher/paraprofessional, however, will need to be quite observant of the child's performance when a new category is begun. If the child performs with ease there may be no need to continue in that category. Teachers will use their own intelligent observations as well as available test scores when making a decision about appropriate activities and materials for a child.

REFERENCES

1 Perkins, Stanley H, Delta 17, Nov 1975.

2 Cruikshank, William M, Journal of Learning Disabilities, Aug 1972.

3 de Hirsch K, Jansky J & Langford W, Predicting Reading Failure. New York. Harper & Row 1966.

4 Masland M W & Case L, Limitation of auditory memory as a factor in delayed language development. Paper presented at the International Association for Logopedics and Phoniatrics. Vienna, August 1975.

5 Spencer E M, Investigations of the maturation of various facets of auditory perception in pre-school children. Doctoral dissertation, North Western University 1959.

6 Aten J & Davis J, Distrubances in the perception of auditory sequence in children with minimal cerebral dysfunction. Journal of Speech and Hearing Disorders. 1968.11. 236-45.

7 Flowers A & Costello M R, Tests of central auditory abilities. Dearborn, Michigan. Perceptual Learning Systems, 1970.

8 Lasky E Z & Tobin H, Linguistic and non-linguistic competing messages effect. Journal of Learning Disabilities. 1973.6. 243-250.

9 Johnson D J & Myklebust H R, Learning disabilities: educational principles and practices. New York, Grune & Stratton 1967.

10 Birch H G & Belmont L, Auditory-Visual integration in normal and retarded readers. American Journal of orthopsychiatry, 1964. 34. 852-61.

11 Birch H G & Lefford A, Intersensory development in children. Monograph of the Society for Research in Child Development. 1963.28. No 5 (serial No 89).

12 Stamback M, The problem of rhythm in the development of children and in the evolution of dyslexia. Enfance 1951, 4. 480-502.

13 Johnson D J, The language continuum, Bulletin of the Orton Society 1968. 18. 1-11.

14 Johnson D J & Myklebust H R, Learning disabilities: educational principles and practices. New York, Grune & Stratton, 1967.

15 Myklebust H R, Learning disorders: psychoneurological disturbances in childhood. Rehabilitation Literature, 1964, 25. 354-60.

16 Strauss A A & Kephart N C, Psychopathology and the education of the brain-injured child. New York, Grune & Stratton 1955.

17 Farnham-Diggory S, Symbol and Synthesis in experimental reading. Child Development 1967, 8. 223-31.

18 Menyuk P & Looney P, Journal of Speech and Hearing Research. 1972. 15. 264-79.

19 Semel E M & Wiig E H, Comprehension of Syntactic Structures and critical verbal elements by children with learning disabilities. Journal of Learning Disabilities 1975. 8. 53-58.

20 Wiig E H & Roach M A, Immediate recall of semantically varied "sentences" by learning-disabled adolescents. Perceptual and Motor Skills, 1975. 40. 119-25.

21 Wiig E H & Semel E M, Journal of Speech and Hearing Research 1973. 16. 627-36.

22 Wiig E H & Semel E M, Perceptual and Motor Skills, 1974, 38. 1331-34.

23 Hallahan D P & Cruikshank W M, Psychoeducational foundations of learning disabilities. Englewood Cliffs N J: Prentice-Hall, 1973.

24 Luria A R, Higher cortical functions in man. New York: Basic Books 1966.

25 Schuell H, Jenkins J J & Jiminez-Pabon E J, Aphasia in Adults. New York: Harper & Row, 1964.

26 Wepman J, Recovery from Aphasia. New York: Ronald Press, 1951.

27 Bender L, A visual-motor Gestalt test and its clinical use. American Orthopsychiatric Association Research Monograph, 1938, No 3.

28 Cohen J & Edwards A E, Word length and discrimination behaviour of aphasics. Journal of Speech and Hearing Research, 1964. 8. 39-42.

29 Marshall J C & Newcombe F, Patterns of paralexia: a psycholinguistic Research, 1973. 2. 175-95.

30 Project Child. N Z Department of Education Research programme.

31 Callendar D J, Marsh R W and Milne K A, Revised Tomlinson Junior School Test. Wellington Department of Education 1967.

32 Elley W and Reid N, NZCER Progressive Achievement Tests. Whitcombe & Tombs, 1969.

33 Holbourn Reading Scale. Wellington. George Harrop & Co.

34 Burt (Rearranged) Word Reading Test.

35 Goodenough F L, The Observation of Children's Behaviour as a method of Social Psychology in Social Forces. 15. pp 476-479.

36 Schonell F J, Backwardness in the basic subjects, Oliver & Boyd. Edinburgh and London, 1948.

37 Weschler Intelligence Scale for Children.

38 Daniels J and Diack H, The Standard Reading Tests, Hart-Davis Educational Ltd, 1976.

39 Croft C, N Z Basic Word List. NZER 1977.

40 Goodman Kenneth S, Miscues : Windows on Reading, in K S Goodman (ed), Miscue Analysis, Urbana, Illinois, ERIC Clearing House, 1973.

41 Smith Frank, Psycholinguistics and Reading. New York, Holt Rinehart. Winston, 1973.

42 Taranaki Research Project - Learning Difficulties. No 6049. A study of learning disabled children in two New Plymouth schools.

43 Clay M M, Reading : The patterning of complex behaviour. Heinemann Educational Books, Auckland 1972.

44 McIlroy K, Helping the poor reader : A book for parents and teachers. Heinemann Educational, 1976.

45 ERIC. Early reading in-service course. Department of Education NZ.

46 Brake R, Developing Prereading Skills. Holt Rinehart & Winston. New York, 1977.

47 Wiig E H & Semel E M, Language disabilities in children and adolescents. Columbus, Ohio. Merrill, 1976.

48 Wiig E H & Semel E M, Test of Linguistic Concepts. In language disabilities in children and adolescents, pp 112-113.

49 Clay M M, Gill M, Glynn T, McNaughton T, Salmon K. Record of oral language. NZEI, 1976.