

# **An Evaluation of MULTILIT**

**'Making Up Lost Time In Literacy'**

## **Executive Summary**

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The MULTILIT ('Making Up Lost Time In Literacy') Initiative, directed by Professor Kevin Wheldall from Macquarie University Special Education Centre (MUSEC), comprises research and development into more effective ways of teaching low-progress students experiencing difficulties in learning literacy skills, carried out in the MULTILIT classroom programs and in the MULTILIT Clinic at MUSEC and in outreach programs.

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## **DEDICATION**

This report is dedicated to all of our MULTILIT students, whom the regular systems of schooling had previously failed but who showed what they could achieve when given effective literacy instruction within a positive environment.

Just a perfect day  
You made me forget myself  
I thought I was someone else  
Someone good.  
‘Perfect Day’, Lou Reed, 1972  
(from the album ‘Transformer’)

## EXPLANATORY PREFACE

The structure of this Executive Summary of our project Report parallels the structure of the Report *per se*, for the sake of clarity and ease of cross referral. Consequently, the Executive Summary comprises three sections consisting of ten chapter summaries. The *Key Outcomes* and *Implications*, arising from the Report, are listed separately at the beginning of this Executive Summary.

The contract for this project clearly specified the remit of the project in terms of a 'services description' (A1) and nine 'service objectives' (A2 to A10). We have annotated below the original listing of description and service objectives, detailing which chapters in the Report address the various issues. (Reference to all works consulted are listed at the end of each chapter of the Report.)

*A.1 The Services to be provided were described in Attachment A, the project proposal, which was appended to the contract.*

A statement of the problem to be addressed and a review of the theoretical basis for MULTILIT are provided in Section A, Chapters 1 and 2 respectively. The MULTILIT Program *per se* is described in Section A, Chapter 3.

*A.2 To complete a systematic and comprehensive evaluation of the MULTILIT Initiative in a variety of forms and over a variety of sites including the MULTILIT Program at MUSEC, the Focus on Academic Skills Teaching Program at MUSEC, the MULTILIT Clinic and tutoring program at MUSEC, the 'Schoolwise' Project at Exodus in Ashfield, and the MULTILIT Outreach at a boys' high school in Sydney, based on empirical efficacy data;*

These evaluations of efficacy are reported in Section B, Chapters 7 to 9.

*A.3 To investigate the systemic requirements for the project to be adopted by a host institution, to determine contexts in which MULTILIT is most appropriate and effective and to discuss implementation problems and how they may be overcome;*

These issues are addressed in Section C, Chapter 9.

*A.4 To conduct more extensive follow-up work than previously conducted (12 month as well as 6 month follow-ups of students) to measure long term maintenance and general disability of literacy skills learned;*

The follow-up work is reported in Section B, Chapters 7 and 8.

*A.5 To attempt to determine typical literacy growth evidenced in low-progress readers at regular school, that is prior to students entering the MULTILIT programs;*

A review of our evidence relating to this issue is provided in Section A, Chapter 6.

*A.6 To provide illustrative data on a simple, direct and cost effective measure of reading progress already developed by Professor Kevin Wheldall, Director, Macquarie University Special Education Centre (the Wheldall Assessment of Reading Passages (WARP)) together with indications of its sensitivity in detecting changes in reading performance;*

WARP is fully described in Section A, Chapter 5, and is revisited throughout.

A.7 *To attempt to establish the meaning of being functionally literate in the mainstream in terms of both minimal reading age equivalent and literacy performance criteria, with a view to returning students to the mainstream as quickly as possible in order to increase the cost effectiveness of the model;*

This issue is introduced in Section A, Chapter 2, and is revisited in Section C, Chapter 10.

A.8 *To suggest supplementary programs in the mainstream (such as peer tutoring programs) which might facilitate and accelerate the re-integration of students in the mainstream, once again increasing cost effectiveness;*

This is addressed in Section C, Chapter 10.

A.9 *To suggest strategies for students for life back in the mainstream in terms of independent learning and organisational behaviour and surviving less than exemplary teaching;*

This is addressed in Section C, Chapter 10.

A.10 *To produce a report addressing the following areas:*

- *empirically based comparisons of MULTILIT program efficacy across a range of educational sites/settings;*
- *based on the above, a prescription of the ideal operating conditions for maximum efficacy together with considerations of cost effectiveness in terms of models of program delivery advocated;*
- *a frank reporting of any problems encountered in terms of implementing the program in non-MUSEC school contexts and strategies for overcoming them;*
- *a considered appraisal of the utility of the existing experimental reading progress measure (the WARP) in efficacy research, in measuring change in reading performance over relatively short periods of time (sensitivity) so as to facilitate data-based instruction of reading, in monitoring progress toward functional literacy and, perhaps, in serving as an appropriate, quick but valid reading measure for comparison purposes between schools;*
- *specific advice on the meaning of functional literacy in functional terms ie in terms of reading age, in terms of words read correctly per minute and in terms of level of text accessible to the 'functionally literate' student; and*
- *particular attention to the most important aspects of any training/instructional program, namely the degree to which gains made are maintained in and are generalisable to the natural environment, as assessed by reference to longer term (six month and twelve month) follow-up data.*

These issues form the basis of the Report and are addressed consecutively in the following sections/chapters:

- Section B, Chapters 7 to 9;
- Section C, Chapter 9;
- Section C, Chapter 9;

- Section A, Chapter 5 and subsequently throughout;
- Section A, Chapter 2 and Section C, Chapter 10;
- Section B, Chapters 7 and 8.

## Key Outcomes

The key outcomes from our program of research, detailed in our Report and summarised here, are as follows:

1. Effective literacy instruction for older low-progress readers should be both balanced and research-based drawing on the considerable body of empirical research into reading carried out over the past twenty or so years.
2. Such instruction should incorporate intensive and systematic teaching in three main areas - phonic word attack skills, sight words recognition and regular supported text reading.
3. The MULTILIT methods described in this report, consonant with both 1 and 2 above, have been shown consistently to deliver significant and appreciable gains in reading and related skills over short time periods (two and four terms of instruction).
4. Curriculum-based measures of reading (such as the WARP) are valid indicators of reading performance and allow regular, repeated tracking of reading progress.
5. Low-progress readers in regular classes in their final primary school years make little or no further progress in reading and related skills (at best one month's growth every two months).
6. Low-progress readers in Years 2 to 6 experiencing the full-time MULTILIT Program at Macquarie University Special Education Centre typically make gains of 15 months in reading accuracy and 13.5 months in reading comprehension, over two terms of instruction.
7. Older low-progress readers in Years 6 and 7 experiencing the mornings only MULTILIT program known as Schoolwise typically make gains of 15 months in reading accuracy and 11 months in reading comprehension, over two terms of instruction.
8. MULTILIT Clinic clients at Macquarie University Special Education Centre typically make gains of about 7 months in reading accuracy over nine weeks of parent tutoring using the MULTILIT Reading Tutor Program.
9. Low-progress readers in Years 3 to 6 attending a single primary school made mean gains of about 20 months in both reading accuracy and reading comprehension, over two terms when experiencing an attenuated MULTILIT program for under two hours per day.
10. A high proportion of low-progress readers may be experiencing childhood depression.
11. Following MULTILIT programs fewer low-progress readers present as depressed.
12. Students attending MULTILIT programs typically maintain the gains made at six and twelve month follow-up. There is typically little evidence for further gain, however, particularly for students with a *reading disability* who may need continuing support throughout their schooling.

## Implications

On the basis of the evidence adduced in the Report and briefly reviewed in this Executive Summary, the following *implications* are worthy of consideration.

1. Forms of MULTILIT instruction may be highly beneficial for many low-progress readers in state and other schools.
2. The provision of MULTILIT instruction may also be advantageous for students from indigenous, non-English speaking, and socially disadvantaged backgrounds.
3. The provision of MULTILIT instruction for young and adult offenders in custodial institutions might usefully be trialed.
4. Curriculum-based measurement of reading is a cost-effective measure for use by teachers to identify and to track the progress of low-progress readers.
5. The need for a carefully graded, sequenced reading scheme is indicated to meet the instructional needs of low-progress readers.
6. The apparent co-morbidity of childhood depression and reading disability is an area still in need of further research in Australia.
7. Instruction for the most severe cases of reading disability is an area still in need of further research and development.
8. Further research into effective instruction in reading comprehension to meet the needs of students from non-English speaking backgrounds is necessary.
9. The diagnosis of *reading disability* might reasonably be reconsidered as a valid category of disability and for disability funding purposes so as to allow the necessary intensive instructional support to be provided.
10. Educationists might usefully reconsider the desirability of withdrawal models of service delivery given the demonstrated efficacy of short-term, intensive, literacy intervention programs such as MULTILIT.

## 1. An introduction to MULTILIT

For those of us who take literacy for granted, who can literally 'take it as read', it is difficult to imagine what it must be like for students who start high school with poorly developed, or nearly non-existent, literacy skills. The main aim of this project was to provide a thoroughgoing evaluation of the efficacy of an intensive, systematic, skills-based literacy program, known as MULTILIT, in redressing the literacy difficulties of older low-progress readers.

MULTILIT stands for 'Making Up Lost Time In Literacy'. The MULTILIT Initiative is a research and development enterprise directed by Professor Kevin Wheldall from Macquarie University Special Education Centre (MUSEC). This Initiative comprises research and development into more effective ways of teaching older low-progress students experiencing severe difficulties in learning literacy skills, carried out in the MULTILIT classroom programs and clinic at MUSEC, and in MULTILIT outreach programs.

The MULTILIT Initiative has three main foci:

- Service provision
- Research
- Product/Program development

All students attending MULTILIT programs, both within MUSEC Special School and in various outreach settings, do so as a direct result of their special learning needs in the area of literacy, that is, being significantly behind their peers in reading and related skills. This is typically operationalised as being at least two years behind in terms of reading accuracy.

The generic classroom behaviour management model underpinning the Program is predicated on the principles and methods of 'Positive Teaching' while the overall orientation to teaching is avowedly non-categorical. This recognition that the problems of low-progress readers may stem, at least in part, from inappropriate teaching per se is carried through in the academic element of the initiative which provides a strong, systematic, skills-based literacy program predicated on methods and strategies of proven effectiveness as a result of research carried out within the MULTILIT Initiative at MUSEC, and elsewhere. The MULTILIT Reading Tutor Program, the focus of the literacy intervention, comprises instruction in word attack skills, sight word recognition and supported reading of natural language texts.

The Report details evaluations of efficacy which provide strong evidence for the effectiveness of the MULTILIT Program over three years of operation, 1996, 1997 and 1998. Other implementations of the MULTILIT Program (including variations) are also evaluated and reported.

## **2. Essential constituents of effective reading instruction for low-progress readers**

As a result of the considerable body of reading research undertaken over recent decades, a great deal more is now known about both the knowledge and the skills necessary for becoming a proficient reader. The nature of a generic effective model of instruction and the specific knowledge and skills which need to be mastered in order to develop reading proficiency have been verified by a considerable body of research and are well documented and widely agreed upon by many researchers and practitioners.

The focus on instructional issues appears no longer to be confined to the 'either/or' dilemma of whole language versus phonics instruction. There is increasing acknowledgment that the *'both/and'* approach is appropriate and desirable in providing a wide range of effective teaching and learning opportunities for students to enable them to acquire and develop reading skill. There appears to be a growing consensus that component skills of reading learned in isolation are of relatively limited utility in and of themselves, and that they have true value only when practised in meaningful, connected text.

### **The reading process**

When skilled reading occurs, decoding is accurate and automatic, oral reading performance is fluent and expressive, and the cognitive process of constructing meaning is ongoing and purposeful. Skilled readers can effectively integrate information from the text with what they already know to construct ongoing meaning and demonstrate high order comprehension skills.

Reading appears to be effortless to the skilled reader only because the word recognition component of the reading process has become automatic to the point where there is no overt awareness of the complexity of the behaviour which is occurring. The skilled reader has developed automaticity in the lower order word recognition components of reading; he or she is able, quickly and accurately, to recognise individual letters and spelling patterns and to translate them into words with apparent ease.

A minority of learners appear to develop understanding of the alphabetic principle and learn to read with little or no explicit instruction. Probably the majority of children learn to read with instruction and, regardless of mode, acquire the alphabetic principle. For a significant number of struggling, beginning and low-progress readers, however, this is not the case. For these students intervention which delivers well sequenced, structured and explicit instruction in code emphasis activities is required, along with extensive practice to ensure mastery of the component skills of reading and their integration in the reading of connected text. Instruction for beginning readers and low-progress readers alike must be purposeful, strategic and based on methods of proven efficacy.

### **Models of reading instruction**

Current research findings lead us to believe that a heavy emphasis on systematic phonics instruction combined with the reading of natural language texts is the most effective and efficient way to approach both initial reading instruction for the majority of learners and remedial instruction for low-progress readers. This view of reading, which acknowledges the simultaneous integration of orthographic, phonemic, syntactic and semantic cues, is referred to as an interactive model. In this model, learners are directly and explicitly taught to apply whole word recognition skills and phonic

knowledge skills to decode words. These skills are then applied and practised to develop automaticity through the reading of a variety of meaningful, connected texts at an appropriate level.

The Spalding method of teaching reading incorporates a systematic, explicit approach but the component parts are initially taught to mastery in isolation and before progressing to reading words in context in books. Reading Recovery is also considered by some as following an interactive model but research in New South Wales has found it to be effective for only one child in three undertaking the program. The success of students in Reading Recovery programs has been shown, in fact, to be largely dependent upon their level of phonological processing skills on entering the program.

Systematic, skills-based reading instruction, as reflected in a truly interactive approach, is supported by the so-called simple view of reading. Two components of reading are identified in the simple view: first, that which allows language to be recognised through its graphic representations (decoding); and second, that which allows language to be understood (comprehension).

## **Decoding**

The term decoding is used in its broadest sense to describe the process of translating written text into spoken words. More specifically it is used to describe the process of deciphering words through the use of phonological coding (phonic word attack skills), while the term word recognition is used to refer more specifically to recognising words through graphic information stored in memory (whole word recognition). Both of these strategies are necessary components of a reading program.

Understanding of the alphabetic principle is necessary in order to access words that have never before been seen in print. Beginning and low progress readers need to become proficient in both phonemic awareness and letter-sound knowledge. They need to develop phonic word attack skills.

Whole word (or 'sight word') recognition refers to the ability to identify familiar words without the need to analyse their component parts. Since the most frequently encountered one hundred words in print account for around half of all printed words encountered in text, it makes good sense to teach a corpus of familiar or frequently occurring words. It enables the novice learner to acquire a bank of high frequency sight words which can be retrieved directly from memory through lexical access. It introduces students to the idea of reading and facilitates early success in reading text which contains those previously learned words.

## **Comprehension**

Around 75% of children will, regardless of the type of reading instruction received, discover the advantages of applying the alphabetic principle to reading. There appears to be general agreement that without this ability to identify words accurately and fluently, students will be inhibited in their efforts to develop the higher order skill of comprehending written text. If individual words in a text cannot be identified nothing else in the reading process will happen.

Linguistic comprehension, the second component identified in 'the simple view of reading', is the ability to take semantic information at the word level and construct meaning at the sentence level. Reading comprehension requires the use of the same

skills as oral comprehension but in response to print rather than in response to speech. Reading comprehension is developed through regular practice in reading natural language texts and the explicit teaching of specific skills. According to the simple view of reading, word recognition skills and linguistic comprehension are the two essential prerequisites for reading text.

### **What do we know about low-progress readers?**

Across the very substantial body of research on reading there is undeniable evidence of the strong relationship between word recognition and reading comprehension. The vast majority of low-progress readers show deficits in their phonological processing skills, that is, in their ability to use phonological information to decode written text. The primary factor preventing the vast majority of low-progress readers from improving their reading performance is their poor word decoding skills. They are unable to match letters with their corresponding sounds to decode words. In other words, their phonic word attack skills are poor.

### **Functional literacy and decoding skills**

The term 'functional literacy' is a level often used as a benchmark measurement of reading. Functional literacy is probably equivalent to a reading age of around ten to ten and a half years and is achieved by most students by the end of Year 5 (or the sixth year of schooling). A functional level of literacy needs to be attained by a student if he/she is to meet the minimum reading demands which are made in lower secondary school, or even by the final primary years.

Some low progress readers with poor phonic word attack skills can and do rely on other strategies to read text which are less efficient but, none the less, effective to some degree. Some readers may even be able to reach a functional level of reading while maintaining relatively poor phonic word attack skills, by acquiring a very large lexicon of sight words, for example. *As a general teaching strategy for reading, however, this is not to be recommended - it is far too risky.*

While most reading researchers and practitioners would probably agree that learners should make use of both context cues and letter-sound cues when reading words, the critical point is that the use of phonic word attack skills is the strategy more likely to result in consistent and independent accurate word recognition. Furthermore, there is a general consensus that readers need to develop a bank of high frequency sight words which can be recognised accurately and fluently without the need for analysis of their component parts.

Effective reading instruction for low-progress readers requires: (i) a well developed phonic word attack skills program; (ii) opportunities to acquire and practice a bank of useful, high frequency sight words; and (iii) regular practice in reading meaningful, connected text in a supportive context. Such a truly interactive model is operationalised within the MULTILIT Reading Tutor Program. Instruction focuses on phonic word attack skills (understanding and applying the alphabetic principle to decoding words), sight word recognition (developing lexical access in memory) and the practice of these skills through reading natural language in meaningful and age appropriate text matched to the child's reading level, within a supportive tutoring context.

### **3. A description of the MULTILIT Program: predicates, programs and procedures**

Children who have failed to learn to read by the usual methods in the first few years of school need intensive systematic reading instruction. MULTILIT aims to provide precisely that and is predicated upon:

- a non-categorical approach to instruction;
- a Positive Teaching approach to effective classroom behaviour management; and
- a balanced, 'interactive' model of effective literacy instruction.

#### **A non-categorical approach to instruction**

Categorising or labelling a child with a disability type or diagnosis identifies that child with a group who, in theory, have similar instructional needs. It also suggests that students who have been diagnosed with different learning problems will respond differentially to different interventions. Research shows that this is not, in fact, the case. The majority of special educators today favour what is known as 'a non-categorical approach' to teaching students with special needs and are committed to the conviction that all children can learn, given effective instruction. The forms of pedagogy to be employed, however, are determined not by the nature of the child's disabling condition but by a needs-based appraisal of the student's current level of functioning. The categories commonly employed to describe students with apparently similar disabilities and difficulties are of little or no use in determining the appropriate pedagogy to be employed with a particular student. Categorisations based on measured IQ, for example, have proved to be particularly unhelpful in terms of informing instructional decision making. Measured intelligence has very little relevance to how we go about teaching a child to read.

#### **Positive Teaching for effective classroom behaviour management**

Effective teacher management of classroom behaviour is an essential prerequisite for effective classroom teaching and learning to take place. If the teacher is prevented from teaching, or students are prevented from getting on with their academic work, as a result of either their own inappropriate behaviour or that of other students, then clearly little of educational value is likely to be achieved. Amount of time spent appropriately academically engaged is vital to the progress of both able and less able students.

The child whose behaviour is continually disruptive, or who is even quietly, but regularly, 'off-task' is seriously educationally disadvantaged, since academic engaged time is one of the most important correlates of academic progress. Successful classroom behaviour management ensures that maximal learning time is delivered. We advocate Positive Teaching to maintain attention to task.

Positive Teaching derives from the 'Positive Teaching Project' conducted by Kevin Wheldall and Frank Merrett from the Centre for Child Study at the University of Birmingham during the 1980s. Wheldall and Merrett produced a series of intensive, skills-based training packages for teachers in effective classroom behaviour management, based on their program of observational and experimental research in classrooms.

'Positive Teaching' is based on applied behaviour analysis and observed classroom processes. In essence the procedures advocated 'accentuate the positive' by requiring teachers to focus their attention on students when they are behaving appropriately ('catch them being good') rather than continually being on the lookout for, and reprimanding, inappropriate behaviour, in line with traditional reinforcement theory. Positive Teaching advocates increasing teacher praise and approval and decreasing disapproval and reprimands. Reprimands are used very sparingly, specifically and privately and in a positive context overall. A number of procedures are advocated which have been shown experimentally to bring about improved classroom behaviour, often requiring teachers to change their own teaching behaviour or to make changes in the classroom environment. Classroom seating arrangements, for example, has been an area of particular interest in which Wheldall has carried out a series of studies. Positive Teaching procedures are thus characterised by a concern with ecological classroom variables and setting events for classroom behaviour, as well as contingency management procedures. They are also child centred in the sense that student initiations and negotiations constitute critical components of the approach. For example, students themselves can be directly involved in bringing about behaviour change by employing self-monitoring strategies to determine whether they are on- or off-task.

Positive Teaching is taught to teachers by means of skills-based training comprising five one hour sessions, preferably held weekly after school. Following course attendance, teachers appreciably decrease their use of reprimands, increase their use of praise and reward and, most importantly, bring about substantial positive changes in the levels of on-task behaviour of their classes.

All MULTILIT teachers attend Positive Teaching Package courses and are thoroughly trained in Positive Teaching methods. Classroom observations have shown that, consequently, MULTILIT teachers typically praise about ten times the rate typically observed in regular classrooms. In MULTILIT programs, extensive use is made of student self-monitoring and self-recording strategies. Extrinsic reinforcement is employed at the beginning of the program and is gradually faded, with points and stickers being harder to earn towards the end of a student's time in the MULTILIT program. MULTILIT teachers are also aware of the key antecedents influencing classroom behaviour, such as classroom seating arrangements and using appropriate curriculum materials.

### **A balanced, 'interactive' model of effective literacy instruction**

The theoretical rationale for effective literacy instruction underpinning MULTILIT emphasises the need for a balanced approach combining the best of both 'bottom-up' and 'top-down' methods, as described in Chapter 2.

The careful planning and systematic delivery of an intervention is not inconsistent with teaching in natural environments and using natural routines. Systematic instruction that can be accurately described and independently verified is certainly not inconsistent with flexible or learner-centred interventions.

The components of effective instruction may be summarised as planning instruction, managing instruction, delivering instruction, and evaluating instruction. Instruction is planned for each MULTILIT student based on criterion-referenced tests which identify the skills the student needs and help place the student at the appropriate level in the

various programs employed. Managing instruction is carried out by means of Positive Teaching, as previously described, to create a positive classroom atmosphere with a task-oriented focus, and a clear definition of rules. Systematic approaches to delivering instruction are a key feature of teaching in MULTILIT, including some use of direct instruction. This involves explicit teaching of rules and strategies, using sufficient examples and non examples, frequent responding by students (both chorally and individually), and frequent verbal praise. Students are given clear, unambiguous instructions and are kept informed of their academic performance through the use of corrective feedback. When assessing a student's instructional environment, the focus should be on gathering information relevant to instruction rather than on complex diagnostic procedures. Formative evaluation necessary to make such ongoing instructional decisions is taken regularly in MULTILIT. This formative evaluation is used to make instructional decisions so that each student is consistently placed at the appropriate level in each component of the program.

MULTILIT teachers are trained in effective instruction and data-based teaching, in Positive Teaching, and have particular specific expertise in implementing the MULTILIT Reading Tutor Program which forms the core of the MULTILIT curriculum.

### **The MULTILIT Reading Tutor Program**

The most effective remedial programs for low-progress readers involve intensive, systematic instruction in three main areas: phonic word attack skills; sight word recognition; and supported book reading in a one-to-one context. The MULTILIT Reading Tutor Program incorporates all three of these key features and forms the core of what we offer to low-progress students accessing the classroom programs and clinic within the MULTILIT Initiative at MUSEC and in MULTILIT outreach settings. The program was specifically designed for teaching low-progress readers in Year 2 and above (about seven years upwards) who are reading at a level considerably below what might be expected for their age and who have not acquired the basic skills needed to become functional readers. The MULTILIT Reading Tutor Program comprises three distinct elements.

#### *MULTILIT Word Attack Skills*

Children learning to read primarily need to learn how to 'crack the code' - how to decode words they have not previously encountered by breaking words down into their component phonic parts. Low-progress readers need intensive, systematic instruction both in how to break up ('segment') words into their component letter sounds and, even more importantly, how to 'blend' component letter sounds into words. MULTILIT Word Attack Skills is designed to do precisely this: to teach older low-progress readers the phonic skills essential for rapid decoding.

#### *MULTILIT Sight Words*

Sight words are words that can be read automatically on sight without recourse to decoding strategies. When learning to read, it makes good sense for children to learn a small corpus of very common sight words so that they will not need to struggle to decode every single word that they encounter in a sentence. MULTILIT Sight Words systematically teaches the automatic recognition of 300 high frequency sight words.

#### *MULTILIT Reinforced Reading*

Reinforced Reading is a program developed to enhance the student's independent reading skills and is based on the set of tutoring strategies for use with older low-progress readers known as Pause, Prompt and Praise (PPP). The aim of the tutoring

session is for the tutor to listen to the low-progress reader read natural language books at an appropriate level of difficulty for up to fifteen minutes. The tutor is trained to pause for up to five seconds or wait until the end of a sentence when a mistake is made to permit time for self-correction. If no self-correction occurs, the tutor supplies up to two prompts in the form of a graphophonic prompt (‘‘How does this word begin?’’, ‘‘What sound do these letters make?’’), a contextual cue (‘‘Does that word make sense?’’) or a re-read prompt (‘‘Read that again from the beginning of the sentence.’’). When the student correctly reads a sentence or paragraph, self-corrects without a prompt, or successfully uses a given prompt to identify a word, specific praise is given.

The three elements of the MULTILIT Reading Tutor Program: MULTILIT Word Attack Skills, MULTILIT Sight Words, and MULTILIT Reinforced Reading, form the bedrock of any MULTILIT program.

### **Daily activities in the MULTILIT Program**

MULTILIT students spend the first two hours of their school day in their home group of eight students of varying ages and abilities under the direction of one teacher. During this first session of the day, students are called individually in turn to their one-to-one session with their teacher (typically for about 15 minutes), and to their Reinforced Reading (PPP) session with a teacher’s aide or parent/community volunteer (15 minutes). In addition, while in their home group, students spend approximately one and a half hours carrying out individual work or activities set out in a work contract. Contracts are designed to encourage responsibility for organising and completing work independently. Each student has an individually designed contract tailored to meet his/her particular needs and students are rewarded when they complete all contract work assigned for the week.

MULTILIT one-to-one teaching activities provide sequential learning for students who are behind in reading skills. The MULTILIT Reading Tutor Program forms the core for these lessons as previously noted. At MULTILIT, the program is implemented by a teacher, but a teacher’s aide, trained volunteer, trained parent, or skilled peer tutor working under direction of a teacher could also implement the program. Each child is tested on entry to the MULTILIT Program to place them at the appropriate levels in each component of the MULTILIT Reading Tutor Program. As we have already seen, the lessons in this program concentrate on decoding skills (MULTILIT Word Attack Skills), accurate and automatic recognition of sight words (MULTILIT Sight Words), and the practice and generalisation of these skills using the connected reading of real text (in MULTILIT Reinforced Reading). Also included in the one-to-one session, and depending on the student’s need, is an auditory awareness training program, and repeated reading, designed to build reading fluency of text and help in the generalisation of decoding and comprehension. Others will require repeated reading designed to improve reading accuracy. Some students, who specifically need to improve their comprehension skills have appropriate activities included in their one-to-one session. Together, the components of the MULTILIT Reading Tutor Program and the supporting materials used during the one-to-one session comprise a set of very powerful teaching tools.

MULTILIT utilises other teaching strategies and programs to support and extend the instruction provided by the MULTILIT Reading Tutor Program and to provide opportunities for students to generalise their skills. Following a brief recess break, the daily routine resumes in MULTILIT with the format changing from individual to group instruction. Students work in small groups of approximately eight students, based on

ability level. Each group sits in a semi-circle desk formation, with the teacher in the middle of the circle so that eye-contact can be made with each student. There are three 30 minute lessons between recess and lunch, all of which are carried out in groups. These lessons are spelling, reading, and comprehension/writing. In addition to these lessons, students and teachers engage in 10 minutes of Uninterrupted Sustained Silent Reading (USSR), spend five minutes having reward stickers awarded for appropriate behaviour during the morning session, and enjoy a 15 minute session of Serial Reading immediately prior to the lunch break. Four hours of intensive instruction in literacy are thus delivered between 9.00 and 1.15 pm daily, with only a 15 minute break for recess. The specifics of the group lessons are detailed below.

### *Spelling Mastery*

The main spelling component of the MULTILIT program is delivered by means of the SRA Spelling Mastery program. Teachers also program for generalisation using a variety of activities such as dictation, story writing and computer spelling games. These activities allow the student to practise their newly acquired spelling skills in less structured, more naturalistic and meaningful contexts.

### *Reading Rigby lesson*

During group reading lessons, books are introduced and discussed, opportunities are taken to build vocabulary, and the story is read aloud by the students in turn with the teacher using the Reinforced Reading strategies of Pause, Prompt and Praise. Although any graded reading scheme could be used for this group lesson, we have found the (now out of print) Reading Rigby series to be finely levelled and very appropriate for low-progress readers.

### *Comprehension*

Different skills are targeted during the comprehension lesson using the graded SRA Multiple Skills comprehension program. These include understanding the main idea of a story, finding facts located in a passage, understanding context clues, making inferences, and the extension of vocabulary. Students are exposed to a variety of comprehension formats to help them generalise their skills.

### *Uninterrupted Sustained Silent Reading (USSR)*

Teachers demonstrate the importance of reading as a recreational activity by modelling the desired behaviour of quiet reading. This is sometimes referred to as USSR or Uninterrupted Sustained Silent Reading. For 10 minutes each day, all MULTILIT students and teachers engage in Uninterrupted Sustained Silent Reading. USSR promotes reading as a *pleasurable* activity, and, along with Serial Reading, provides an important element in the interactive model that MULTILIT seeks to deliver.

### *Serial Reading*

For the purposes of Serial Reading, MULTILIT students are divided into junior (Years 3 and 4) and senior (Years 5 and 6) groups. For 15 minutes a day a teacher reads from a novel selected from books aimed at the interest level of the students.

Although the primary focus of MULTILIT is literacy, the full-time program includes instruction in mathematics and other key learning areas in the afternoon sessions where MULTILIT students practice their reading and writing skills.

## 4. General research methods

The same basic evaluation procedures were employed for all efficacy evaluations on all of the various MULTILIT sites. All students were thoroughly assessed on entry to and on exit from the MULTILIT programs on a variety of standardised or curriculum-based measures including the Neale Analysis of Reading Ability - Revised, the Burt Word Reading Test, the South Australian Spelling Test, the Wheldall Assessment of Reading Passages (WARP), the MULTILIT Word Attack Skills Placement Test, and book level assessments. Such measures allow for comparisons of overall growth in literacy skills against standardised levels of performance, to ensure that MULTILIT is meeting the objective of rapid progress toward functional literacy.

Students were typically assessed *on entry* to the programs, *retested* after two terms, which for most students was the end of their program, and then *retested twice subsequently* at two term intervals (roughly every 5-6 months) to assess maintenance and generalisation of literacy skills learned.

We endeavoured to demonstrate the low rates of progress typically made by groups of low-progress readers in regular school programs. Where such groups are comparable to treatment groups, we may compare progress during MULTILIT programs with progress *typically* made by low-progress readers not receiving MULTILIT intervention.

Limited use was also made of (more qualitative) small-scale survey and focus group techniques to add a more descriptive dimension to this efficacy research.

### **Target group and composition of the samples of students**

The target group for the MULTILIT programs comprised older, low-progress readers; specifically, students in Years 3 to 7 (aged 8-13 years) who were at least two years behind their chronological age in terms of reading age as measured by Neale Analysis of Reading Ability - Revised (accuracy) but who (preferably) had made a start in learning to read and who could read simple text (ideally have a minimum reading age of, say, six and a half years). Having said this, complete non-readers were also included in the sample, as were a small number of Year 2 students.

### **Assessment procedures**

Students involved in this research project were tested on the battery of tests of reading and related literacy skills and were typically retested five months later after two terms (20 weeks of instruction), to determine how much progress had been made. Data collection was completed by trained and experienced research officers or by trained research assistants supervised by members of the highly experienced team of MULTILIT literacy research officers.

### **Test instruments/measures employed in the studies**

The following reading and spelling tests were administered individually to the students in the period 1996-98:

#### *1. The Neale Analysis of Reading Ability - Revised*

The principal reading assessment utilised in this evaluation was the Neale Analysis of Reading Ability - Revised which aims to provide global indicators of performance in

two of the main skills involved in reading: reading accuracy and reading comprehension.

#### *2. The Burt Word Reading Test*

The Burt Word Reading Test has a long history in educational research and is a measure of single word recognition in isolation.

#### *3. The Wheldall Assessment of Reading Passages (WARP)*

The WARP is a new curriculum-based measure of reading which consists of a series of five 200 word passages, each passage comprising an entire story. The development of this test is described in some detail in Chapter 5.

#### *4. South Australian Spelling Test*

Spelling performance was assessed using the South Australian Spelling Test. The revised norms for this simple spelling test provide estimates of spelling age (based on a sample of South Australian students) from 6 to 15.5 years.

#### *5. Book level*

Book level data were also collected to measure progress in the curriculum. When students enter a MULTILIT program, they are placed on appropriate book levels at instructional level (90-95% accuracy) and are promoted to succeeding levels as they progress. Reading Rigby levels were employed in this research.

The assessment battery was adjusted over the course of the evaluation. Some data included in the project were collected prior to the evaluation study being contracted, hence there is variability in sample sizes for some measures. The Neale Analysis of Reading Ability - Revised was the constant dependent variable throughout the research.

### **Follow-up testing**

Where possible, students completing the standard two term MULTILIT program were followed up twice at approximately six monthly (two terms) intervals to test for maintenance and possible generalisation of the skills learned during the MULTILIT program. The Neale Analysis, only, was administered, for reasons of economy and comparability across program intakes, at six month and twelve month follow-up testing.

### **Effect size**

In line with contemporary best practice in empirical educational research, we have sought to go beyond the concept of mere *statistical significance* and to provide estimates of the *size* of the gains or effects obtained. To this end we have employed the concept of the *effect size*. The effect size is the size of the difference between experimental and control group means divided by the standard deviation of the control group yielding, in effect, a Z score or normalised standard deviate. Effect sizes are typically classified as small (0.20), medium (0.50) or large (0.80).

## **5. Monitoring the performance of low-progress readers: development of the WARP**

Effective monitoring of the progress of low-progress readers is critical for effective remediation. If we are to remediate effectively with low-progress readers it is essential to know *whether* the individual child is progressing and, if so, at what *rate* the child is progressing. Empirical research strongly supports the use of such ongoing measurement and has found that it leads to measurable gains since it provides direct feedback to teachers on the efficacy of the instruction they are providing.

Curriculum-based measurement (CBM) is a set of procedures for measuring student proficiency and indexing growth in the curriculum. This set of procedures was developed in response to the problems associated with the use of standardised, norm-referenced tests.

The Passage Reading Test (PRT) represents an alternative, curriculum-based measure of reading progress to more traditional reading tests. The PRT requires students to read from any appropriate grade level basal reader for just one minute. The number of words read correctly in this period is the index of the student's current level of reading performance. This simple measure of reading has been shown repeatedly to correlate highly with other measures of both reading accuracy and reading comprehension. Moreover, such measures may be used very effectively to track reading progress and, thereby, the efficacy of reading instruction provided.

If performance on curriculum-based passage reading tests is to be used to monitor progress toward a long term goal, that goal needs to be identified. We suggest functional literacy as an appropriate long term goal for low-progress readers.

### **Development of the WARP**

In 1995 the first author (Wheldall) commenced development of a set of generic passages for the curriculum-based measurement of reading. In its original form, the Wheldall Assessment of Reading Passages (WARP) consisted of fourteen 200 word passages. These passages, of roughly equal difficulty and each comprising an entire story, were specially written to preclude the possibility of students having encountered the passages before. The development of the WARP is summarised here since it was a major dependent variable in the efficacy evaluations of MULTILIT subsequently reported.

Two preliminary small scale pilot studies were conducted to provide data on the degree to which the passages were similar in terms of difficulty level, both across and within passages. In the first pilot study, a group of 21 low-progress readers from Years 5 and 6 were tested on the original 14 WARP passages. The number of words read correctly in the first minute (WPM) and also the number of words read correctly per minute averaged over the whole passage (WPP) were calculated for each passage. The two alternative scoring methods, WPM and WPP correlated highly on all 14 passages (0.94 to 0.99). Moreover, the 14 passages scored for WPM intercorrelated at 0.84 to 0.98 and at 0.89 and 0.98 for WPP. This indicates excellent parallel or alternate form reliability.

Five passages identified in the first pilot study as being the most similar from the original fourteen passages were subsequently administered to a second incidental sample of 21 low-progress readers from Years 6 and 7. Once again, the means and standard deviations for the five passages were very similar. Correlations between the

two forms of scoring were exceptionally high (0.96-0.99) and highly significant ( $p < 0.001$ ), as were intercorrelations between the five passages both for first minute only (0.83-0.92) and whole passage modes of scoring (0.91-0.96).

A larger sample of 190 participants in Years 3 to 7 were subsequently assessed on the same five passages. (38 classroom teachers had been asked to identify four "average readers" and one "low-progress reader".) The high alternate forms reliability found in the pilot studies was replicated with this larger sample with coefficients ranging from 0.95-0.96 and 0.96-0.98, for WPM and WPP respectively. In addition, internal consistency was extremely high, with correlations between WPM and WPP of 0.99 for *all five passages*. Mean scores (and standard deviations) for WPM and WPP provided further support for the similarity of the five passages. It was also shown that the WARP very effectively differentiated low-progress readers from regular progress readers, the average older low-progress reader reading the WARP passages at below Year 3 level for regular readers. On the basis of these studies, it was also concluded that the small increase in reliability and validity gained by having students read the entire passage was not worth the extra time and effort involved, given the very high correlations found between WPM and WPP. In the WARP, a measure of oral reading fluency is gained by having students read passages for one minute only.

In order to be confident that the WARP is valid (that is, that it measures what it claims to measure) performance on the test was compared with performance on other established tests of reading ability. This exercise establishes criterion-related validity. The first validity study, involving 146 low-progress readers, examined the relationship of the WARP to the Neale Analysis of Reading Ability - Revised. Alternate forms reliability was again found to be extremely high (0.94-0.96). Similarly, mean scores for the five passages ranged from 77 to 82 and the standard deviations were very similar. Highly satisfactory correlations were found between the WARP and reading accuracy on the Neale (0.78-0.80). The relationship between Neale comprehension and the WARP, however, was lower than expected (0.49-0.55).

The main purpose of a second validity study was to examine the criterion validity of the WARP on a sample that was representative of the full range of reading ability. This was achieved by examining the relationship of the WARP to the Neale Analysis and the Burt Word Reading Test. The sample comprised a group of 50 regular students from a Sydney primary school; 10 students from each of Years 2 to 6. The WARP passages, and the mean score over the five passages, correlated highly with Neale accuracy scores at 0.85 on average, with coefficients ranging from 0.84-0.87 ( $p < 0.001$ ). Good correlations were also found between the WARP and Neale comprehension scores (0.67-0.72,  $p < 0.001$ ). The Burt Word Reading Test also correlated highly with the WARP, with coefficients ranging from 0.83-0.85 ( $p < 0.001$ ). The five passages of the WARP also correlated highly with each other, with coefficients ranging from 0.94-0.96 ( $p < 0.001$ ). The similarity of the passages was further supported by the closeness of the mean scores which were all within 3 words per minute of each other on average, with very similar standard deviations.

### **Comparison data on the WARP by grade**

In the large scale study completed during the initial development of the WARP, some preliminary, tentative findings on performance on the WARP across grade (Years) were provided. A more extensive data collection exercise on the WARP was subsequently undertaken which provided comparison data based on a much larger sample of 1011 students from 43 classes of primary school students in Years 2 to 6.

The five passages again yielded very similar means and standard deviations, the means differing by no more than four words per minute. Moreover, the inter-correlations between the passages were all over 0.95. These results confirm on a very large and representative sample that the five passages yield highly similar results and may be regarded as parallel forms.

The five passages also yielded very similar results within each age group and WARP score was shown to rise steadily by grade level up to Years 5 and 6 where a ceiling effect appeared to set in. There was also a strong effect for gender of students with girls outperforming boys on all passages by around 13 words per minute on average. The table below presents rounded mean values for the WARP, averaged over the five passages, for Year 2 to Year 6, together with the 50% range limits. Values below the lower 50% range figure indicate levels achieved by the bottom 25%; values above the upper figure indicate levels achieved by the top 25%. These figures provide comparison data by which to evaluate the performance of individual students. Low-progress students may be operationally defined as those scoring below the 50% range limit for their age, ie. the bottom 25%.

*Average reading levels for the WARP for Years 2 to 6 (words read correctly per minute)*

| Year | Rounded Mean | 50% Range |
|------|--------------|-----------|
| 2    | 84           | 51 - 109  |
| 3    | 109          | 85 - 135  |
| 4    | 118          | 93 - 144  |
| 5    | 135          | 109 - 163 |
| 6    | 139          | 112 - 172 |

### **Sensitivity of the WARP to progress in reading performance**

One of the key incidental questions to be answered by this research program was to determine the sensitivity of the WARP to increasing change/progress in reading performance. Chapter 7 of the Report describes in some detail the performance of students attending the MULTILIT programs who attended for the whole year in 1997 and in 1998. This provides evidence for the sensitivity of the WARP.

For 19 low-progress readers from the 1997 MULTILIT cohort we have full data sets at February intake, in June after almost two terms in the program, and in November, almost at the end of the program. With a mean age of just under 11 years, this group were, on average, over three years behind in terms of reading accuracy. Increasing mean reading age for accuracy from 87 to 100 to 110 months was accompanied by a steady increase from 45 to 77 to 100 in the mean number of words read correctly per minute as measured by the WARP.

Similarly, 18 students attended the MULTILIT Program for the whole of 1998 with a mean age just under 9 years and who were nearly three years behind in terms of reading age for accuracy. These students were assessed on the Neale Analysis, the Burt and the WARP on entry in February, in July after two terms in the program, and again

in December at the end of the year after two further terms in the program. Students were also assessed on the Burt and the WARP after one term in April and after three terms in September.

These students made mean gains over the school year (just over ten months between initial and final testings) of around two years in reading performance. On the Burt, students averaged about six months' growth each term. Reading performance is tracked over the equivalent of two years' growth in reading performance by successive growth in mean WARP scores in successive terms from 23 to 39 to 62 to 80 to 89 words read correctly per minute, thereby demonstrating the sensitivity of the WARP to change in performance. The influence of practice effects on these results is unlikely to be very great for low-progress readers since practice effects are dependent upon the very form of incidental learning which low-progress readers find particularly difficult.

The development of a reliable, valid and sensitive measure of reading progress which takes literally only one minute to administer will present realistic opportunities to special educators, reading educators and, ideally, regular classroom teachers for tracking the reading progress of their students, on a regular basis.

## 6. Typical rates of progress of low-progress readers

It is clearly anticipated that students who are experiencing extreme difficulty in acquiring the basic skills of literacy will achieve lower scores on standardised measures of reading and on curriculum-based measurements than students who are progressing at a rate roughly commensurate with their chronological age. It is unclear, however, just what rate of growth is *typical* for low-progress readers in the primary/early high school years. Such information is important in assessing the efficacy of specific literacy interventions such as MULTILIT by providing a true baseline against which such interventions may be evaluated; a yardstick, in effect, by which to compare the effect of literacy intervention. Previous research provides evidence in support of the obvious (that low-progress readers make low rates of progress) but varies in the estimates provided of the *rate* of progress. We wanted to know the *typical* rates of progress targeted low-progress readers would make *prior* to entry into MULTILIT programs.

### **A sample of Year 4 and 5 students assessed prior to, and subsequently upon, entry into the MULTILIT Program**

This study aimed to establish typical rates of literacy growth of low-progress students failing to acquire basic literacy skills, prior to their entry into the MULTILIT Program (see Chapter 7). Twenty-three students in Years 4 and 5, identified as low-progress readers by their teachers, were assessed in late September 1996 on the Neale Analysis of Reading Ability - Revised and again in early February 1997, prior to entry into MULTILIT. These students, after having attended school for an average of 6.14 years had gained only six months on average per year in reading accuracy and only six and a half months per year in reading comprehension. The mean gain over the 4 month period prior to MULTILIT entry was *minus* 0.78 months (standard deviation 8.10 months) for Neale accuracy and 2.91 months (standard deviation 9.24 months) for Neale comprehension. By Years 5 and 6, these low progress readers had basically stopped making any *progress* in reading accuracy but were still making limited progress in reading comprehension.

### **A sample of Year 5 and 6 students assessed prior to, and subsequently upon, entry into the Schoolwise Program**

Seventeen students in Years 5 and 6 were assessed on the Neale Analysis in October 1998 to confirm their eligibility for entry into the Schoolwise Program (see Chapter 8) and were assessed again in early February 1999. On the Neale accuracy measure, they had typically been gaining only six months on average per year. On the Neale comprehension measure, these results showed that the students had typically been gaining less than eight months per year. The mean *loss* over the four month period prior to Schoolwise entry was *minus* 3.82 months (standard deviation 6.99 months) for Neale accuracy and *minus* 6.53 months (standard deviation 0.08 months) for Neale comprehension. At the very least, this study casts doubt on the instruction provided being sufficiently robust, from a maintenance point of view, if it washes out over the period between testings (including the holiday period).

### **A sample of low-progress Year 7 students**

Data informing this issue were also available from a sample of 57 very low-progress Year 7 students assessed before and after an eight month interval on measures of reading and related skills. The participants in this study were identified by their high

schools as being very low-progress students in terms of literacy, falling within the bottom 6% for NSW. All students were assessed in Term 3 when they had been attending high school for over six months and were retested at the commencement of Term 2 of the following year, after approximately eight months, to determine how much progress had been made following low-intensity literacy intervention carried out by the schools. For reading accuracy and reading comprehension as measured by Neale Analysis, there was evidence of four and five months average growth respectively, over the eight months. These very low-progress readers in Year 7/8 typically made only very modest progress even when afforded targeted literacy intervention (albeit non-intensive in nature).

### **A planned study specifically designed to address the issue**

As a follow-up to these findings based on incidental samples of students, we initiated a study specifically addressing this topic. The aim of the study was to attempt to establish typical rates of literacy growth in low-progress primary aged students (Years 3 to 5) who were struggling to acquire basic reading skills. Of 68 students originally tested toward the end of Term 2, only 24 met the criterion of being at least two years delayed in reading performance, with a further 17 being at least one year delayed. These 41 participants were retested six months later in December (Term 4). These students, after being at school an average of 5.3 years had been falling behind by five to six months on average per year.

The mean gain over the 6 month period for Neale accuracy was 5.51 months and 4.34 months for Neale comprehension. The mean rate of progress was thus greater during the 6 month period covered by the study than gains typically made over 6 month periods during the previous years at school. The gains made by the Year 5 students on Neale accuracy and comprehension appeared to be somewhat lower than for Years 3 and 4 suggesting that progress declines as low-progress readers reach the final years of primary schooling where the emphasis on basic skills acquisition will have been reduced. It should also be noted that a condition of being permitted to carry out this research study was that the results were to be made available to the teachers immediately after the first testing and, hence, teachers/schools *might* have been prompted to initiate reading interventions for the targeted students which would not otherwise have occurred.

In summary, some groups of low-progress readers appeared to make little or no progress and some even appeared to go backwards. Others made modest gains, on average, of about three to four months over two terms while other groups of students (many of whom were not low-progress readers as defined for the purposes of this research) made almost average gains once their teachers were alerted to the problem. If pressed to provide an estimate of the likely progress of older low-progress readers (Years 5 to 8) who are at least two years behind in terms of reading skill, and who are offered either no or only limited non-intensive remedial support, then we would conclude that progress of about half normal rate is probably typical.

## **7. Evaluations of MULTILIT Programs and follow-up studies**

The various programs and manifestations of the 'Making Up Lost Time In Literacy' or MULTILIT Initiative all have their origin in the University-based MULTILIT Program which operates on a full-time basis for primary aged students in our Special School at Macquarie University Special Education Centre. Research and development over many years has led to what we believe to be, and what is now supported by a substantial body of evidence as being, a highly effective set of instructional strategies. Clustered together, these instructional techniques constitute the MULTILIT Program.

Evidence for the efficacy of the full-time MULTILIT Program is presented over the three years 1996 to 1998. Over the period of this evaluation, various models of the MULTILIT Program were trialed, including a program for younger students known as the FAST (Focus on Academic Skills Teaching) Program. Full-time programs for primary school aged students having difficulty in acquiring basic literacy skills varied in length of time and were offered to different aged groups of students over the three years covered by this report. For the purposes of this evaluation, we have reported the performance of students after two terms (about 20 weeks of instruction or one semester) in the program. Some data are available for a smaller sub-group of students who participated in the program for four terms (or a whole school year). The results for each of the six successive intakes are detailed in the main Report, as well as a thorough analysis of the total sample of 142 students which is summarised here. Students from Years 2-6 are represented in the total sample although the full-time MULTILIT Program principally targets students in Years 3-6.

### **Results of the MULTILIT Program 1996 to 1998**

Students participating in the University-based program were referred by teachers, school counsellors or parents who were concerned that the student was not developing adequate literacy skills in their regular school environment. The group of students on whom we have data were, as a result, a clinical sample. The mean chronological age of the 142 students comprising the total sample at the commencement of their two term programs was 10 years and 5 months. Boys accounted for 75% of the group, with students from Years 5 and 6 being heavily represented as a result of the intake policy (Year 5 and 6 students only) in 1996.

At program commencement, the average reading age for reading accuracy for this group of students was 87 months (7 years: 3 months), and for reading comprehension 94 months (7 years: 10 months). Students were over three years (38 months), on average, behind their chronological age in reading accuracy, and over two and a half years (31 months) behind for reading comprehension.

After two terms of instruction within the MULTILIT Program, the 142 students made mean gains of 15 months in reading accuracy, and 13.5 months for reading comprehension. On a smaller subset of 97 students for whom WARP data were available, students could read 38 words more words correctly per minute than at pre-test, an increase of 96%. For the 85 students who completed the South Australian Spelling Test, a mean gain of 16 months was made in two terms of instruction, and a mean gain of 15 months was made on the Burt Word Reading Test for the 66 students who completed it. The results for the total group after two terms of instruction are presented in the table below together with gain scores, and statistical information, including effect size. All of the gains made were highly significant ( $p < 0.001$ ).

*Means (and standard deviations) of the Relevant Literacy Variables and the Resultant Gains for the Total Sample*

| Literacy Variable            | N   | Pre-test         | Post-test         | Gain             | F     | p     | ES   |
|------------------------------|-----|------------------|-------------------|------------------|-------|-------|------|
| Neale Accuracy (months)      | 142 | 87.13<br>(15.49) | 102.21<br>(17.67) | 15.08<br>(9.46)  | 58.52 | 0.001 | 0.97 |
| Neale Comprehension (months) | 142 | 94.44<br>(17.69) | 107.94<br>(20.15) | 13.49<br>(13.21) | 35.95 | 0.001 | 0.76 |
| WARP (wcpm)                  | 97  | 39.73<br>(29.69) | 77.71<br>(36.44)  | 37.98<br>(16.46) | 63.31 | 0.001 | 1.27 |
| SA Spelling (months)         | 85  | 88.92<br>(12.00) | 104.60<br>(11.38) | 15.68<br>(7.23)  | 76.47 | 0.001 | 1.30 |
| Burt (months)                | 66  | 85.27<br>(14.08) | 100.00<br>(19.43) | 14.73<br>(9.10)  | 24.87 | 0.001 | 1.05 |

Powerful effect sizes were evident on all literacy variables, but particularly for gains made in reading accuracy, reading fluency (the WARP), single word recognition (the Burt) and in spelling (very nearly 1.0 or higher). The effect for reading comprehension was lower but still appreciable.

In terms of reading accuracy, 87% of students accessing the MULTILIT program over the three years made gains of at least 6 months or more and 61% made gains of 12 months or more, in approximately 20 weeks of instruction. For reading comprehension, 71% made gains of at least six months and 51% made gains of 12 months or more. Curriculum-based assessment data on book level were also collected which are detailed in the Report.

We may *estimate* the typical rate of progress this sample would be likely to have made, if the students had remained in regular school, by reference to rate of progress of low-progress readers prior to entering the MULTILIT Program in February 1997 as Year 5 and 6 students, as previously discussed. This sample of 23 students had typically been gaining, on average, about one month for every two months in school over their school careers thus far and had made little or no progress over the previous term in reading accuracy and only small progress in reading comprehension. Consequently, we may *estimate* that the present total sample would be unlikely to have progressed by more than about three months, *at most*, over the two terms had they not undertaken MULTILIT programs, compared with the mean gains they did achieve of 15 months in reading accuracy on the Neale and the Burt and 13.5 months in Neale reading comprehension. This is about five times the rate of progress they probably would have made and about three times the average rate of students progressing normally in regular schools. To this extent, our goal was achieved of greatly accelerating the rate of progress of these low-progress readers beyond the normal or average rate for primary students, thereby allowing the opportunity for 'making up lost time in literacy'.

Differential gain across gender for the total MULTILIT sample was also analysed, notwithstanding the fact that the sample size for girls (35) was far lower than that for boys (107), the results of which are detailed in the Report. In brief, no gender

differences in gain were apparent; boys and girls benefited equally from the Program. Similarly, an analysis of referral information, detailed in the Report, showed that MULTILIT appears to be effective as an intensive intervention for low-progress readers *regardless* of the apparent reasons for their disability or learning difficulty.

### **But what happens after students leave the MULTILIT program?**

There is no point in investing significant resources if improved performance is either short-lived or dependent on the context in which the program is delivered. Consequently, we followed up as many students as possible from the total sample, 6 months after leaving a two term program, and then a smaller subset after 12 months.

We were able to follow up and assess 57 students from the total sample of 142 MULTILIT students on the Neale Analysis (Revised) (only), 6 months after leaving their two term MULTILIT programs and returning to their regular schools. This reduced sample of 57 students comprised 44 boys (77%) and 13 girls (23%) and had a mean chronological age of very nearly 11 years. Performance on the Neale Analysis showed that these students, at pre-test on program entry, had been about three years behind their chronological age in terms of reading accuracy and about two and a half years behind in reading comprehension, on average. Highly significant mean gains had been made by this group of students in both accuracy (15 months) and comprehension (about 16 months) during the program ( $p < 0.001$ ). These results suggest that, to this extent, the students comprising the sub-sample followed up at 6 months were typical of the total sample.

After being back in their regular schools for about six months, these former MULTILIT students, on average, clearly maintained their program gains in reading accuracy and in reading comprehension, reading age scores improving by a further 2.5 months and 1.0 month respectively. These gains were not, however, statistically significant suggesting no real further improvement in reading skill. The gains had clearly not washed out but nor did the students continue to gain appreciably when they left the program, *on average*. In this case, however, the devil is in the detail and, in particular, the high variability in follow up gains evidenced by the very high standard deviations for both accuracy (9.57) and comprehension (15.39). For accuracy, the top quartile had made additional gains of over 8 months whereas the bottom quartile had lost at least 4 months at 6 month follow-up. For comprehension, the situation is even more extreme whereby the top quartile (25%) had made additional gains of over 9 months whereas the bottom quartile had lost up to 8 months.

It appears as if there are three distinct groups of students, for accuracy and comprehension separately: those who do not hold their gains, those who essentially maintain their gains and those who continue to progress after leaving the program. The results for gains from pre-test to 6 month follow-up reflect the overall efficacy of the intervention six months after leaving the program. The overall gains from pre-test to follow-up were 17.54 months for reading accuracy and 16.81 months for reading comprehension. The top quartile for accuracy gained at least two years and for reading comprehension at least two years three months; the middle 50% gained 11 to 23 months and 6 to 27 months respectively. Thus very nearly 75% made and held gains of at least a year for accuracy and 75% made and held gains of at least six months for comprehension.

A sub-sample of 37 students from the total sample of 142 MULTILIT students were re-assessed on the Neale Analysis (only), 12 months following their discontinuation from the two term program. The gains made by this sub-sample of students on both

accuracy (14 months) and comprehension (about 17.5 months) during the program were similar to the gains made by the total sample and to the larger sub-sample (n=57) followed up at 6 months, as reported above.

Twelve months after discontinuation from the program, this group of students, on average, clearly maintained their original program gains in reading accuracy and in reading comprehension. The gains over the intervening period, however, were minimal, reading age having improved in 12 months by only a further 4.5 months for accuracy and not at all for reading comprehension. The gains clearly did not wash out, on average, over the period but nor did the students continue to gain appreciably after leaving the program.

### **Results for the 1997 MULTILIT Whole Year Program**

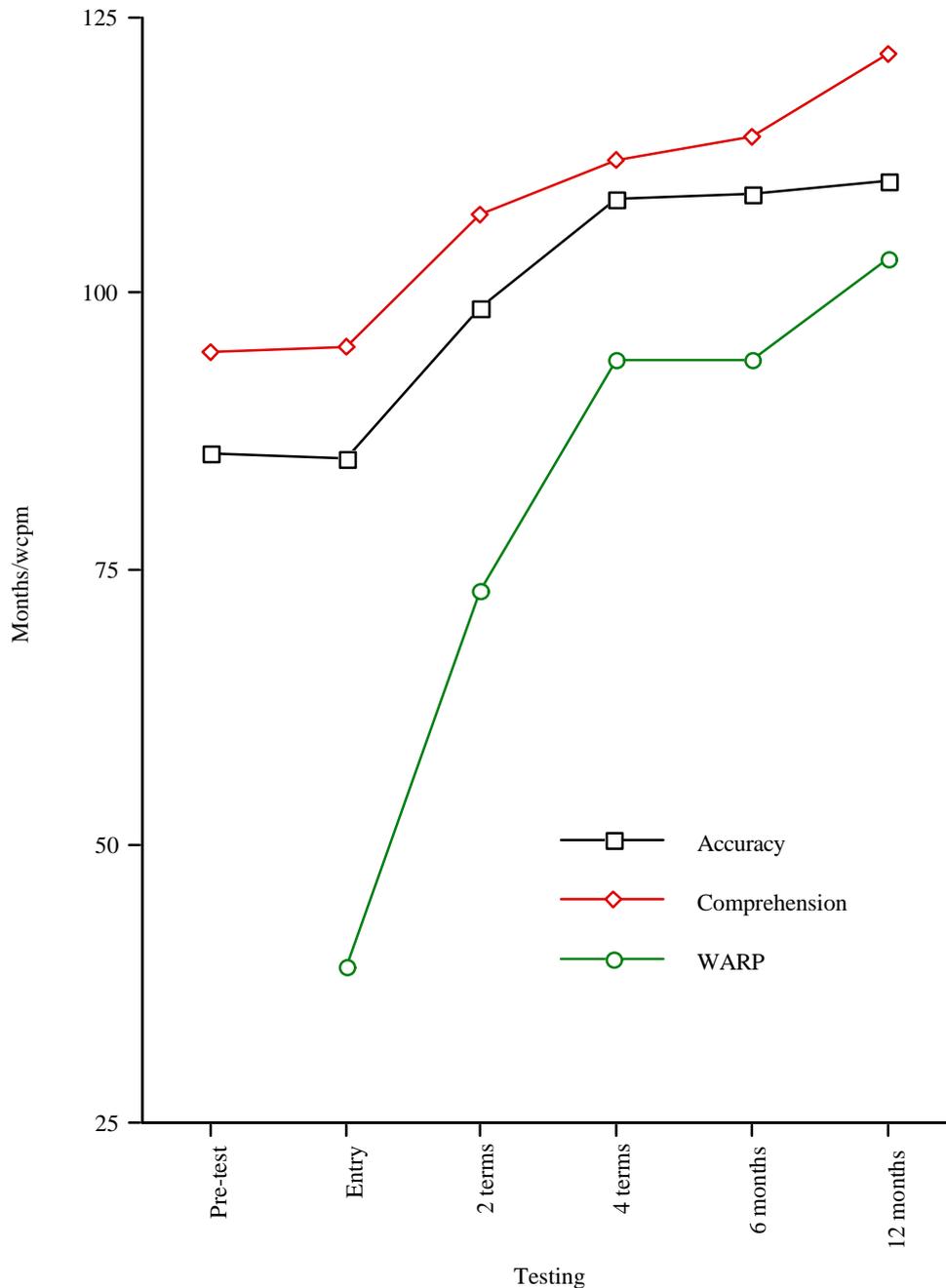
Results were available for a sample of students who attended MULTILIT for the whole year in 1997. These students had also been assessed prior to entry into the Program. It proved possible to re-assess 13 of the original 19 students at periods of both 6 and 12 months following their discontinuation from the Program. These 13 students were assessed on the Neale on six occasions and on the WARP on the last five of these at roughly 5-6 month intervals as follows:

1. In late September, 1996 prior to entry into the MULTILIT Program;
2. In early February, 1997 on entry;
3. In June 1997 after two terms in MULTILIT;
4. In late November, 1997 after four terms in MULTILIT;
5. In May/June, 1998 at six month follow up; and
6. In November/December 1998 at 12 month follow up.

This provided a unique opportunity to track the progress of a group of students for over two years prior to, during and following exposure to the MULTILIT Program. The mean chronological age of this group was just over ten and a half years at program entry, when they were, on average, about three and a half years behind chronological age in reading accuracy and over two and a half years behind in reading comprehension. Average performance for this group of 13 students is shown in graphical form on the following page so as to illustrate progress over the two years.

For reading accuracy and comprehension, there was little or no change in performance in the period prior to program entry, as we have come to expect for older low-progress readers. On all three measures, dramatic growth was evident during both the first two terms and the second two terms of the MULTILIT intervention. Over the six month period back in regular schools, following discontinuation from the program, however, there was little evidence for further gain but the existing gains, made in MULTILIT, were clearly maintained. This was also true for accuracy in the following six months up to 12 month follow up but for both reading comprehension and reading fluency (WARP) further appreciable gains were apparent.

Mean scores for Neale Accuracy and Comprehension (months) and the WARP (wcpm) for 13 MULTILIT students prior to, during, and following a four term MULTILIT Program



### Consumer feedback on MULTILIT

In order to ascertain parents' (and caregivers') responses to their child's participation in the MULTILIT programs at MUSEC, we asked them to complete a questionnaire when they brought their child back to MUSEC for follow-up testing at 6 month (and in some cases 12 month) follow-up. Data were available for students participating in the various MULTILIT programs in 1997 and 1998. Ninety four percent of parents surveyed considered that the program had benefited their child and over half believed that their child's skills were now adequate to access their regular classroom curriculum. Parents did, however, comment that their child had experienced certain difficulties as a result of

participating in the program. These issues were subsequently addressed and the program modified accordingly. Reflections on MULTILIT from the students' perspective are reflected in the Report by way of inclusion of student speeches at graduations over the period 1996-8. In the words of one of our students from 1998, after two terms in MULTILIT:

One of the main things that I have found is that I am not as dumb as I thought I was. I now know that I can do great work and achieve many things.

## 8. Evaluations of Schoolwise Programs and follow-up studies

Initial disaffection and subsequent alienation from high school may lead some students into increased truancy and a potential for a generic decline into petty crime/delinquency, substance abuse and 'streetlife'. For many such students, problems begin early as a result of initial academic failure in learning basic literacy skills and are then exacerbated by the increasing demands made by a largely text-based curriculum. Schooling can become an increasingly aversive experience for many such 'marginalised' students.

The 'Schoolwise' Project, developed by Macquarie University Special Education Centre in collaboration with the Exodus Foundation, addressed this problem directly by providing intensive literacy intervention programs for students in Years 6 and 7, who were experiencing such severe literacy problems that they were at risk of becoming seriously disaffected from school.

Consequently, MULTILIT programs were provided by MUSEC for groups of twenty such students each semester at the Exodus Foundation Tutorial Centre in Ashfield, known as the Schoolwise Program. The MULTILIT program offered, designed, developed and delivered by the staff of Macquarie University Special Education Centre (MUSEC), provided systematic intensive literacy instruction. Each Schoolwise Program ran for about twenty weeks (two terms) from 8.45 am until 1:00 pm daily, students returning to their home schools in the afternoons. The Schoolwise Program was typically staffed by one senior teacher and two or three assistant teachers for two groups of ten students. Postgraduate students from MUSEC on practicum placement also typically assisted in the programs. The program was an attenuated version of what is offered in the MULTILIT Program at MUSEC (see Chapter 3), with a two hour 'home group' independent session at the commencement of the day; one half hour spelling lesson (taught in groups); group reading, comprehension and language lessons, for about an hour; and serial reading.

### Results of the Schoolwise Program 1996 to 1998

The results for six successive intakes into Schoolwise between 1996-98 are presented in the Report. Successive groups of Year 6 and 7 students admitted to the two term MULTILIT programs consistently made major gains on the literacy measures employed in the evaluation. For reasons of economy, we present here the *pooled* results of these intakes only, describing a total sample of 106 students.

Of the total sample, 66 (62%) were Year 6 students and 40 (38%) were Year 7 students; 67 (63%) boys and 39 (37%) girls. The mean chronological age of the group was 11 years and 11 months. Performance on Neale Analysis showed that these students were, on average, just over four years behind their chronological age in terms of reading accuracy and nearly four years behind their chronological age in terms of reading comprehension.

All 106 students whose data are included in this total sample experienced two terms in the program. The means and standard deviations for all measures at pre-test and at post-test are shown in the table below. In under five months of participation in the program, these students made average gains in Neale reading accuracy of 15 months, 11 months in Neale reading comprehension, 15 months in Burt word reading, 35 words read correctly per minute on the WARP and 14 months in spelling. It bears repeating that these were students who had made *little or no progress* in recent years and who

were around four years behind in reading and related skills when they commenced the program. Some were complete non-readers at program commencement.

*Means (and standard deviations) of the Relevant Literacy Variables for the Total Sample and the Resultant Gains*

| Literacy Variable            | N   | Pre-test         | Post-test         | Gain             | F     | p     | ES   |
|------------------------------|-----|------------------|-------------------|------------------|-------|-------|------|
| Neale Accuracy (months)      | 106 | 93.60<br>(13.03) | 108.71<br>(16.16) | 15.10<br>(9.01)  | 56.13 | 0.001 | 1.16 |
| Neale Comprehension (months) | 106 | 96.85<br>(14.81) | 107.58<br>(16.52) | 10.73<br>(11.89) | 24.77 | 0.001 | 0.72 |
| Burt (months)                | 56  | 99.11<br>(15.81) | 114.18<br>(20.59) | 15.07<br>(6.99)  | 18.88 | 0.001 | 0.95 |
| WARP (wcpm)                  | 74  | 70.61<br>(30.92) | 105.78<br>(33.11) | 35.18<br>(14.20) | 44.62 | 0.001 | 1.14 |
| SA Spelling (months)         | 73  | 98.15<br>(14.51) | 112.03<br>(11.40) | 13.88<br>(8.57)  | 41.28 | 0.001 | 0.96 |

All of these gains were highly significant statistically ( $p < 0.001$ ) and the effect sizes for all five dependent variables may be classified as large in that they are all over 0.8, except for reading comprehension (0.72). The average effect size was 0.99 which means that as a group they gained almost a whole standard deviation between testings. These 'low-progress' students made as large a gain in five months as *regular* students typically make in one year.

For Neale reading accuracy, 88% made gains of six months or more and 65% of students made gains of a year or more. Similarly, for Neale reading comprehension, gains of six months or more were made by 73% of students and 47% of students made gains of a year or more. On average, they could now read nearly 50% more words correctly per minute on the WARP than they could when they first entered the program.

These students would typically have gained only about five months in reading age each year. We might then have expected the total sample to have made perhaps about two and a half months progress during the course of their two term MULTILIT program at Schoolwise compared with the 15 months they actually made, on average, for both Neale accuracy and on the Burt; six times the rate of progress we might have predicted.

Comparisons of Year 6 with Year 7 students showed that there was no evidence to suggest differential gains by one group over the other. MULTILIT appeared to benefit both Year 6 and Year 7 groups in the Schoolwise Program evenly. Likewise, in terms of sex differences there was no evidence to suggest differential gains by one group over the other. MULTILIT appeared to benefit both boys and girls equally.

## **But what happens after students leave the Schoolwise Program?**

Follow-up assessments were completed (where possible) on students who had attended the standard two term MULTILIT program after six months and twelve months after students had left Schoolwise.

We were able to collect follow-up data on 50 students who had completed the standard two term program at both six and twelve months following departure from the program. At pre-test on program entry these students were, on average, over four years behind their chronological age in terms of both reading accuracy and reading comprehension. Highly significant gains had been made by this sub-group on both accuracy (about 16 months) and comprehension (about 10 months) during the program. These results suggest that, to this extent, the sub-sample followed up at six and twelve months were typical of the total sample.

After leaving Schoolwise and returning to their regular schools for about six months, these students, on average, made minimal further improvement (about a month on average) but clearly maintained their gains in both reading accuracy and in reading comprehension. The substantial gains made in the program clearly had not washed out. High variability in follow up gains was apparent; the standard deviations being high for both accuracy and comprehension. The top quartile (25%) for accuracy gain had made additional gains of over 8 months whereas the bottom quartile had lost at least 3 months; for comprehension the top quartile had made additional gains of over 6 months whereas the bottom quartile had lost at least 5 months.

Twelve months after discontinuation from the program, this group of students, on average, had still maintained their original program gains in both reading accuracy and comprehension with average further gains again being around one month only. The gains clearly had not washed out over the 12 month period but nor did the students continue to gain much after leaving the program. The top quartile had made additional gains of at least 5 months for accuracy and 9 months for comprehension whereas the bottom quartile had lost at least 3 months in accuracy and 5 months in comprehension.

The overall gains from pre-test to follow-up at 6 months for the Schoolwise students were 16.76 months for accuracy and 14.68 for comprehension. Eighty (80%) per cent had made and held gains of at least a year for accuracy and 55% had made and held gains of at least a year for comprehension (nearly 70% at least six months). The parallel gains overall at 12 month follow-up were 18.16 months for accuracy and 15.74 for comprehension. Seventy-five percent (75%) had made and held gains of at least a year for accuracy and 64% had made and held gains of at least a year (75% at least six months) for comprehension.

## **Consumer Feedback on the Schoolwise Program**

Teachers at students' regular schools were supplied with questionnaires at the time of follow-up, either six or twelve months after students had completed the Schoolwise Program. Each teacher was asked to complete one questionnaire referring to all of the Schoolwise students who were enrolled in his/her class. Ninety six percent (96%) of teachers considered that the program had been of benefit to students. The great majority of teachers believed that participation in the Schoolwise program had not led to the stigmatisation of students (94%). Further, two thirds (66%) also believed that it was advantageous for students for the program to be situated separately from the

school. In terms of students' views, three focus groups were completed with groups of students. In summary, students clearly enjoyed the clear instructions provided by teachers, the individual attention, praise, rewards and encouragement. As one of the students put it, in the context of coping with regular school work following attendance at Schoolwise: "It makes it very easier."

## **9. Evaluations of other MULTILIT programs**

In addition to the evaluations completed within MUSEC Special School and the Exodus Foundation Tutorial Centre, we have been able to trial MULTILIT in other locations and forms.

### **The MULTILIT Program at an independent primary school**

Following extensive negotiations with an independent primary school ('Valleyville') in the Sydney area, an official MULTILIT outreach facility was established which allowed an evaluation of a small-scale implementation of MULTILIT for eight low-progress readers which operated in the school in Terms 3 and 4, 1998.

A MULTILIT teacher from MUSEC was seconded to deliver the program on-site for a total of 18 weeks. Instruction took place between 9.00 am - 12.30 pm; just over three hours of MULTILIT instruction being provided per day. Each student had a one-to-one individualised session with the teacher, a MULTILIT Reinforced Reading session with a trained tutor, a group reading lesson, a group spelling lesson, a group comprehension lesson, and an independent contract to complete daily.

The mean chronological age of the eight students from Years 5 and 6 comprising this sample at program entry was 11 years and 10 months. At the commencement of the program, reading accuracy for the group averaged 102 months and reading comprehension 106 months. These students were nearly three and a half years behind their chronological age for reading accuracy and three years behind for reading comprehension, on average.

Highly significant gains ( $p < 0.01$ ) and very large effect sizes (1.33 to 1.90) were in evidence for all literacy measures. After 18 weeks of instruction, the mean reading age had increased by 15 months for reading accuracy and by 16 months for reading comprehension. All eight students made gains of 10 months or more, with three students making gains of 12 months or more, in reading accuracy. Similarly, for reading comprehension, seven of the eight students made comprehension gains of 6 months or more, while five made gains in excess of 12 months. For word recognition, students averaged a gain of 14 months while reading fluency increased by a mean of 54% in terms of words read correctly per minute. Similarly, for spelling, students made an average gain of 16 months. All students had achieved functional literacy in terms of the curriculum material being accessed, by the end of the program.

This off-site MULTILIT program proved to be beneficial for all of the students involved and led to serious consideration being given to a 'mornings only' model being adopted as the standard MULTILIT implementation.

### **The MULTILIT Clinic**

As previously noted, MUSEC offers a MULTILIT Clinic facility. Following a literacy assessment, most parents opt for a MULTILIT Clinic nine week tutoring program for their child if they are shown to be a low-progress reader. Parents (or caregivers) are trained to deliver an individualised program to meet the child's specific literacy needs based on the MULTILIT Reading Tutor Program. The parent and child meet with a trained MULTILIT tutor at MUSEC for a half hour tutoring and monitoring session once per week, the parent tutoring the child for about half an hour per day on the other four week days.

Analyses of the efficacy of this option are based on a sample of 44 clinic clients who accessed a MULTILIT Clinic Tutoring Program. The Clinic sample comprised 10 girls and 34 boys aged just over ten and a half years on average and who were over two years behind their chronological age in both reading accuracy and comprehension.

The mean gains made were highly significant gains ( $p < 0.001$ ), clinic students, on average, gaining ten months in reading age for word recognition, nearly 7 months in spelling age and 16 (more) words read correctly per minute. The *estimated* gain for reading accuracy was 7.5 months. These results show that the MULTILIT Clinic program is capable of delivering appreciable gains over a relatively short time period. For 18 clinic clients who completed *two consecutive tutoring programs*, gains were shown to average 14 months in accuracy and 11 months in comprehension ( $p < 0.001$ ). These results confirm that parent tutoring coupled with a weekly session with a trained tutor *can* deliver impressive gains.

Together with the results from the 'Valleyville' study reported above and, indeed, the Schoolwise studies, there is accumulating evidence that MULTILIT does not necessitate a *full-time* placement for two terms to be effective. Such clinic results are, however, highly dependent upon the commitment of a perhaps idiosyncratic group of parents and students who opted for the tutoring program(s).

### **A 'failed' high school study**

An evaluation study had been planned of another off-site program at a high school for boys, a school serving a largely migrant population in a disadvantaged area ('Bigtown High'). This study did not proceed as planned for a number of reasons unrelated to the efficacy of MULTILIT but which nevertheless served to render the intervention ineffective, as far as we could judge. For example, the only *trained* MULTILIT teacher moved to another school before the program had become established within the school. While lacking in utility as an efficacy evaluation, it provided an object lesson in how to make an effective intervention ineffective by paying insufficient attention to the systemic requirements for interventions to be successfully grafted on to their host institutions. As such it provided a most instructive counter example which is described more fully in the Report.

### **Operating conditions for optimal efficacy**

The 'Bigtown' study led to the delineation of a set of key operating conditions for optimal efficacy when implementing MULTILIT which are detailed in the Main Report and which may be summarised under the following headings:

Trained, committed staff

Time and timing

Resources

Program monitoring for treatment integrity

Commitment of senior staff

Commitment of parents, and

Recruitment of appropriate tutors

## **An Implementation of MULTILIT in a Catholic Primary School**

A MULTILIT implementation study (completed in 1999) which fell outside the remit of the present project was also reported as a demonstration of how the lessons learned so far are being incorporated into the latest operating models of MULTILIT and to good effect.

The project addressed the literacy needs of identified low-progress readers enrolled in Years 3 to 6 at 'St Mary's Primary School'. To this end, a trained MULTILIT tutoring program was established in the School in 1999, in Terms 2 and 3. The St Mary's operationalisation involved two separate groups of 20 low-progress readers (20 from Years 3 and 4 and 20 from Years 5 and 6) for one and a half hours per group per day plus a fifteen minute peer-tutored Pause, Prompt and Praise (PPP) session. The teaching was undertaken by two teachers and two aides (equivalent) per group from the staff of St Mary's, specially trained at MUSEC to deliver the program.

The reduced MULTILIT program focused almost exclusively on reading and included a full implementation of the MULTILIT Reading Tutor Program. Each student received two 15 minute periods of one-to-one time per day from a teacher or classroom assistant and one period from a trained peer-tutor. When not being peer-tutored or working one-to-one with a teacher/aide, students completed independent folder work.

The mean chronological age of the 38 students completing the program (25 boys and 13 girls) was 9 years and 8 months. Students, on average, were over two years behind their chronological age for reading accuracy and nearly three years behind for reading comprehension.

At the end of the two term program, all four measures of reading employed showed highly significant gains ( $p < 0.001$ ) and medium to large effect sizes. These students, on average, gained about 20 months in reading age for both reading accuracy and reading comprehension, 19 months in word recognition and an average gain of nearly 28 words read correctly per minute (44% increase), *after only two terms on this abbreviated program*.

With relatively inexperienced staff (in the sense of being very recently trained in MULTILIT), over a short time frame (two terms) and with only one and three quarter hours of MULTILIT instruction per day, these are impressive findings. This group of students, however, presented as being, on average, appreciably less delayed in terms of reading accuracy than previous samples entering MULTILIT programs.

## 10. Further considerations, discussion and conclusions

We concur with the views expressed by numerous contemporary reading researchers that the time for 'reading wars' is well past and that a more balanced perspective is now necessary. Some students will not pick up the alphabetic principle without explicit phonics instruction. On the other hand, in the past, phonics instruction has been *over-emphasised* by some teachers and has sometimes been ill-conceived or unnecessary or too heavy in concentration. As a result, some students, especially low-progress readers, were sometimes denied adequate access to, and engagement with, books. But failure by whole language enthusiasts to reconstruct and moderate their views on phonics instruction, in the face of accumulating evidence, poses real dangers to their more general credibility. Having witnessed some of the earlier excesses of mindless phonics instruction, we admit to having been deeply sceptical of the benefits of isolated phonics instruction for low-progress readers. In the light of greater familiarity with the relevant literature, however, and experience with the balanced approach (described in the Report) for nearly a decade, both authors are now in little doubt as to the necessity for this form of instruction for low-progress readers if they are going to 'make up lost time in literacy'.

We would also wish to emphasise that there is perhaps unnecessary pessimism concerning the prognosis for older low-progress readers. We support the desirability of a preventative early intervention approach to reading difficulties but some low-progress readers will still slip through the net and early intervention is not always effective. Similarly, the often heard view that remedial instruction for students beyond Year 2 is ineffective may have *been* true, but this is a criticism of the ineffectiveness of past programs, not a necessary truth. We can rehabilitate older low-progress readers, as we have shown, with effective programs based on contemporary, empirically validated best practice, if we have the will and the resources to do so. Moreover, the demonstrable efficacy of non-categorical programs such as MULTILIT, across a multiplicity of referrals, belies the suggestion that different programs are necessary for different cultures and communities. It is the individual child's needs that determine the necessary instruction, not the category.

### **Have reading standards fallen?**

At the forefront of the continuing literacy battles has been consideration of whether levels of literacy or literacy standards have fallen. There is no unequivocal Australian empirical evidence, to our knowledge, testifying conclusively to the fact that students today read less well than those of previous generations. But it does the professional reputation of teachers no good to set their collective face against accumulating *suggestive evidence*, at the very least, that literacy levels have declined. Accepting that there is a problem does not mean accepting that teachers are solely to blame. We could point to inadequate teacher training, the overcrowded primary curriculum, and an ascendant faddism endemic in the academic study of education generally which neglects teaching methods that have repeatedly been scientifically validated in favour of the new and fashionable but sadly lacking in empirical support.

To say that reading standards have not declined misses the point. It should be obvious to all that education today is *more effective* than it was twenty five years ago and that reading levels have demonstrably risen. The prognosis for reading disability should be as reassuring as it is today for childhood leukaemia.

Since we now know far more about how reading works than we did before, the problem is not one of lack of knowledge but of *implementing* that knowledge; of making that knowledge work for the benefit of students learning to read. As a result, and depending on where we draw the line, we could be talking about a quarter of all Australians, children and adults, needing help to redress their inadequate reading and related skills.

If one of the main reasons for not implementing the findings of the research on the effective instruction of reading is the belief that standards are as high as they have ever been, more recent research carried out by the 'ORACLE' project in the UK should cause educational policymakers and academics to review their position. In essence they found that students in the mid 1990s were about a year behind comparable students of twenty years previously in reading and related skills.

It should not prove to be too hard, however, to reverse the decline in reading standards but it will require that methods similar to those described in this report are introduced (or reinstated) in primary schools. The good news is that the introduction of such methods will also make it more possible for students with real reading disabilities to learn to read. Effective literacy instruction tends to be effective in teaching all children regardless of category.

### **Can we cure reading disability?**

Parents, in particular, and certainly some teachers are, in effect, expecting a *cure* for reading disability. Some children, largely handicapped by inadequate access to instruction, can indeed make spectacular gains when reading 'clicks'. Many students with reading and related difficulties, however, are more likely to be handicapped by *endogenous* or constitutional factors rather than experiential or *environmental* limitations, and they will continue to need intensive, systematic instruction in reading and related skills, in some form. On the available scientific evidence so far, we suggest that such children may be considered as having a *reading disability* since they experience particular difficulties in phonological processing. The consequent reading disability may be what underlies what some have previously referred to as *dyslexia*.

In most cases, reading disability is not 'cured' but may be 'treated' by systematic intensive literacy intervention. When the treatment discontinues, however, progress is invariably halted. The obvious conclusion that follows is that, for students with reading disability, it is essential to provide the treatment until such time as the skills are learned to a minimum acceptable criterion such as 'functional literacy', and preferably to a more advanced level.

### **The meaning of being functionally literate in the mainstream**

The term 'functional literacy' refers to the minimum levels of reading and writing skill necessary to get by in the everyday world of work and social activities and represents, crudely, performance at the level of the average 10-11 year old, say, in Year 5. We suggest that this be regarded as the absolute minimum level to which we should aspire for all primary students, including low-progress readers, by the time they leave primary school in Year 6. The data we have available on the WARP at this stage suggests that mid-Year 5 level approximately equates to around 135 words read correctly per minute which may be regarded as an appropriate minimum target for low-progress readers to reach.

## **Is reading age a helpful concept?**

Linking functional literacy to a reading age may not make conceptual sense, however, if the concept of reading age itself is conceptually confused. The concept of reading age needs to be critically examined both in terms of whether it is theoretically meaningful and also whether it is practically useful. It is with the use of reading age *within* school years to compare the performance of individuals that we have *serious* reservations.

The concept of reading age is tenable only if it can be demonstrated that age is an important determinant of reading *in its own right*. We would need to be able to assume not only that older students in different school years/grades tend to be better readers, on average, than students in younger years/grades (which we can assume) but also that older children *within* a grade will, on average, be better readers than the younger students in the same grade. If we look at samples of relevant data, however, it can be shown that this is not typically the case. Across the primary school years, reading performance correlations appear to be as strong or stronger with grade or year level than with chronological age *per se*, and correlations between measures of reading performance and chronological age *within grades* tend to be small and non-significant. Moreover, one of the most striking findings about the reading performance of children of the same or similar age is the remarkable *variability* in performance among children.

The continued use of reading age may lead to untenable conclusions being reached about individual children. In this report, we have used reading age only as an index of progress and it merely reflects the raw score on the test. Similarly, the fact that all students admitted to our programs were at least two years behind in reading age terms simply ensures that they are reading substantially below the mean for their grade level.

## **What is the answer for low-progress readers ..... ?**

Reading to learn will be greatly enhanced by the information technology revolution. Learning to read, however, presents very different problems. In terms of affording effective reading instruction computers cannot come close to what even a primary aged peer-tutor can offer the low-progress reader. Even with today's technology no computer would be able to compete with a human tutor in terms of flexibility to tutor using any available text. The teaching or tutoring of reading is still an idiosyncratically *human* activity.

The remedial reading program known as Reading Recovery has excited considerable professional, public, and even political, interest during the nineties but contrary to common belief, Reading Recovery is designed exclusively for young children in Year 1 who have made little or no progress in learning to read, not older low-progress readers. Moreover, the research underlying the operating principles of Reading Recovery is now rather dated and ignores most of the major advances in what we have learned about how reading works over the last twenty to thirty years. There is also accumulating evidence casting doubt on its efficacy and cost-effectiveness. A revised Reading Recovery model incorporating a stronger phonological awareness training element and more overt systematic phonics instruction could prove to be a useful resource.

## **Learning difficulty and childhood depression**

Classroom observations of students with *learning difficulties* suggest that a relatively high proportion of such students may also present with depressive affective difficulties. Over the last fifteen years there has been a developing interest in the affective aspects of

*learning disability*, researchers examining the possible links between learning disability and childhood depression.

Older low-progress readers are typically (and definitionally) at least two and usually more years behind their peers in basic literacy skills by the time they reach their middle years of schooling (Years 5, 6 and 7). Clearly, such students will have experienced substantial periods of continual failure at school and, consequently may have developed 'learned helplessness'.

In the context of these evaluation studies of the efficacy of MULTILIT, our research team also assessed samples of identified low-progress readers from both MULTILIT and Schoolwise programs using a childhood depression index. For the Schoolwise sample of 104 Year 6 and 7 students, 72% displayed some degree of depression, as measured by this scale. These findings were effectively replicated by the results from the MUSEC MULTILIT Program total sample of 95 low-progress readers from Year 3 to 6, where 61% displayed some degree of depression. Such a high proportion of these students at least potentially experiencing problems with depression is a cause for concern over and above literacy difficulties.

After two terms (or approximately five months) in the programs, both groups of students were re-assessed on the same scale. If we pool the results from the two studies yielding a total sample of 199 students, whereas 67% of low-progress readers could be regarded as at least mildly depressed prior to intensive literacy intervention, this had reduced to 55% by the end of the program; 18% of those apparently originally depressed were apparently no longer depressed.

These findings based on this sample of students are of a preliminary and tentative nature. Nevertheless, intensive academic instruction, raising their reading performance by more than a year in two terms, has been shown to have the statistically significant collateral effect of reducing depression.

We should also consider the link between reading disability and juvenile crime. Research in the UK has shown that over half of a random sample of 150 offenders showed strong indications of dyslexia, replicating the findings of similar studies of offenders in the USA and Sweden. Of a sub-sample of 50 offenders afforded assistance to combat their reading disability, only five subsequently reoffended over a two year period. This suggests yet another powerful political argument for combating illiteracy.

### **MULTILIT in the mainstream**

Students clearly find the supportive context of MULTILIT of great benefit. Many, if not all, older low-progress readers have developed many poor work habits over their years of 'failure' including (often elaborate) work avoidance strategies. Clearly, where one does not have the literacy skills to perform the task in hand, ways of dealing with this are to avoid the work altogether or to look to some one else to do it for you. Broadly speaking, the most effective ways for us to prepare students for life in the mainstream, and then to maintain them once they are there, fall into two categories, behavioural support and instructional support. Both of these areas are discussed in depth in the Report.

## **The centrality of reading comprehension**

The 'simple view' of reading posits two basic processes: decoding and (listening) comprehension. There is little point being able to decode, even to decode fluently, if you are unable to understand the words and sentences you are decoding. Being able simply to decode every word in the text is no guarantee of being able to understand the meaning of the text. If we can teach children to decode rapidly, their reading comprehension is likely to improve. But this is not a total panacea. We need also to consider listening comprehension. A sample of older low-progress readers (Year 7 high school students) were tested on a battery of measures including Neale Analysis accuracy and comprehension, and also a measure of listening comprehension. For the group of 63 students as a whole, listening comprehension correlated significantly with Neale reading comprehension at 0.40 ( $p < 0.01$ ) but did not correlate significantly with Neale reading accuracy. Neale accuracy correlated significantly with reading comprehension at 0.61 ( $p < 0.01$ ). Reading comprehension thus correlated significantly and *separately* with both reading accuracy and listening comprehension since the two latter variables were not significantly correlated with each other (-0.03). These results confirm, for a sample, of low-progress readers the simple view of reading comprehension as comprising the influence of the two variables, reading accuracy and listening comprehension, which together accounted for 54% of the variance in reading comprehension scores. This effectively confirms that the simple model applies to low-progress readers as well as regular readers. But what are the implications of this for practice?

We have stressed the importance of rapid, accurate decoding for successful reading comprehension but clearly some (even many) low-progress readers will need additional practice in operationalising their newly acquired decoding skills in context. Now that they have learned to read they need to read to learn. To do this they will need to optimise their receptive language or listening comprehension skills and, equally importantly, to learn to use these skills *at the same time* as they are decoding.

For students whose reading accuracy is functional but whose reading comprehension is still problematic, we devised PPP-C; an elaborated version of Pause, Prompt and Praise targeting reading comprehension. In PPP-C, the student reads text at recreational reading level, so that no more than five errors per one hundred words can be expected. During text reading the tutor stops the reader at frequent intervals to ask probing questions using the 5W+H strategy; by asking who, what, when, where, why and how questions about the content of the story. The amount read before asking the questions is dependent upon and informed by the success of the reader in answering the questions. For some students it may be necessary to begin by asking questions after every sentence. When the tutor asks a question, s/he pauses for up to five seconds to allow a response or for an initially incorrect response to be corrected by the reader. Failure to answer or self-correct after five seconds leads to the prompt strategy. The first prompt is to indicate where on the page the answer is generally to be found, and the question is repeated. If this fails, the second prompt identifies the critical sentence containing the answer to the question which the reader is asked to read out aloud again, and once more the question is repeated. After two prompts without the correct answer being given by the reader, the tutor supplies the answer and moves on. As in classic PPP, the reader is praised for good reading and responding, self-correcting, working it out after a prompt and so on.

A ten week trained peer tutoring program was designed to enhance the reading comprehension skills of a group of 16 Year 7 and 8 girls identified as experiencing difficulties in literacy. The program was established in a girls' high school in Sydney

across terms three and four, 1998. Students participated in the program each school day for a period of 15 minutes. Year 10 and 11 students volunteered as tutors for the program and were trained to use the modified PPP-C designed to develop reading comprehension skills.

These students were aged, on average, about 13 years and were over two years behind in reading accuracy and over three years behind in reading comprehension. After 10 weeks of PPP-C tutoring, the 16 students made an average gain in reading accuracy of 10 months and of 14 months in reading comprehension. Such gains in comprehension, in particular, are outstanding results for a program of such short duration comprising such short tutoring sessions provided by peer-tutors.

## **Conclusion**

We have demonstrated that almost all MULTILIT programs have been extremely effective in raising performance levels in reading and related skills. The single exception was one program in an outreach setting which incorporated very few of the key operating principles. MULTILIT appears to be feasible as a program when employed for only two to three hours per day for two terms, when operationalised according to the delineated operating conditions. More generally, we have shown that intensive systematic literacy programs, which draw on what recent research has shown to be critical to effective reading instruction, have the potential to redress social as well as educational problems. We have shown that we can do something to reverse declining literacy standards. Now that we *know* the essential constituents of effective instruction for low-progress readers, education systems no longer have any excuses.