

2005

## In teachers' hands : effective literacy teaching practices in the early years of schooling

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Louden, W., Rohl, M., Barratt-Pugh, C., Brown, C., Cairney, T., Elderfield, J.,...Rowe, K. (2005). *In teachers' hands : effective literacy teaching practices in the early years of schooling*. Mount Lawley, Australia: Edith Cowan University.

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Department of Education, Science and Training



# In Teachers' Hands



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**Effective Literacy Teaching Practices  
in the Early Years of Schooling**

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In Teachers' Hands was funded by the Australian Government Department of Education, Science and Training under the Grants for National Literacy and Numeracy Strategies and Projects Programme.  
Website: <http://www.dest.gov.au/>

In Teachers' Hands: Effective Literacy Teaching Practices in the Early Years of Schooling  
ISBN: 0-7298-0567-0

Published by Edith Cowan University  
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DEST Clearinghouse for Literacy and Numeracy Research Projects  
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## Executive Summary

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### **Aim and Methods**

The aim of this study was to identify teaching practices that lead to improved literacy outcomes for children in the early years of schooling.

### **Literacy Assessments**

The study began with literacy assessments of a representative national sample of 2,000 children using a literacy scale prepared by the Australian Council for Educational Research for the *Longitudinal Literacy and Numeracy Study (LLANS)*. Assessments were carried out by 200 classroom teachers, half of whom were teaching in the first year of formal schooling and half of whom were teaching in the second year of formal schooling. A random sample of ten children from each class completed the one-on-one individual assessments of letter recognition, word recognition, phonological awareness and receptive comprehension at the beginning and again at the end of the 2001 school year.

### **Value Added Analysis**

Subsequently, a 'value added' analysis was undertaken, comparing the mean growth over a school year in *LLANS* literacy scores for each group of ten children. In order to link estimates of growth in student achievement with teacher behaviour in each of the class groups, a schedule of school visits was arranged. The teachers approached to participate in the classroom observation phase of the study were selected on the basis that the mean standardised residual for their group of ten children assessed in the previous year was significantly more than expected, as expected, or less than expected.

### **Classroom Observation**

The researchers then spent between two and four days in each school during the 2002 school year. Audio and video records were made of the classroom visits, and teachers were observed during literacy teaching sessions and interviewed about literacy teaching. Subsequently, a representative two hours of video from each class was selected for analysis. The selection was transcribed and linked to the video evidence using vPrism video software. The *Classroom Literacy Observation Schedule (CLOS)*, based on the project literature review, was used to score the presence or absence of 33 literacy teaching practices grouped into the six dimensions of participation, knowledge, orchestration, support, differentiation, and respect. Each selection of classroom video was divided into activity episodes, typically of 10 - 20 minutes in length. For each of these episodes, teachers were scored on the presence or absence of each CLOS teaching practice. Each item selected for inclusion in the observation schedule was based on an extensive international literature review.

### **Quantitative Analysis**

Three types of quantitative analysis of the CLOS data were undertaken, in order to understand the link between student achievement and classroom literacy teaching practices.

A simple descriptive analysis, by frequency, explored the teaching practices in each dimension for each teacher visited. The aim of this was to provide a picture of the differences in consistency of demonstration of teaching practices from each CLOS dimension between the three groups of teachers whose children's growth in literacy was significantly more than expected, as expected, or significantly less than expected.

A confirmatory factor analysis was then used to validate the groupings of teaching practice under each dimension. This technique allowed the placement of constraints determining which observed variables were related to specific dimensions on substantive grounds.

The Rasch model for dichotomous data was used to develop an ordered measure of literacy teaching practices, ranging from those teaching practices which were thought to be common among the less effective teachers through to teaching practices that were thought to be common only among the more effective teachers. It was hypothesised that, among the class teachers whose children scored overall at higher-than-expected levels on the *LLANS literacy* assessments, all 33 of the literacy teaching practices were likely to be observed. Among the class teachers whose children scored overall at lower-than-expected levels on the *LLANS literacy* assessments it was hypothesised that only the lowest ranked literacy teaching practices were likely to be observed.

### **Qualitative analysis**

The final stage of the study was a qualitative analysis of the video data and accompanying transcripts. The goal of this analysis was to provide a textured and nuanced account of the application of each of the 33 literacy teaching practices in the classrooms of teachers whose students learned more than expected, as much as expected, or less than expected in one year of school English literacy teaching.

### **Findings**

1. The *Classroom Literacy Observation Schedule* that was devised for this study was shown empirically to be appropriate for classroom observation of teachers' pedagogical practices.
2. The type of literacy teaching *activity* used by the teachers varied only slightly according to teacher effectiveness. The same few activities were widely used by all teachers regardless of their effectiveness. Generally, the more effective, effective and less effective teachers all extensively used familiar early years literacy activities such as shared book reading, modelled writing and phonics teaching. However, there were distinct qualitative differences in the ways in which these activities were carried out by teachers of varying degrees of effectiveness. Some literacy teaching activities that we had expected to find, such as the use of phonics-based commercial literacy programs and computer-based literacy activities, were not widely used by the teachers in our observation sample.
3. Literacy teaching *practices* varied according to teacher effectiveness. The more effective and effective teachers demonstrated a wide variety of literacy teaching practices from all six dimensions of the observation schedule. The less effective teachers demonstrated a limited number of literacy teaching practices that were also spread across the six dimensions of the observation schedule. In addition to these quantitative differences, there were also distinct qualitative differences between the more effective and effective teachers and the less effective teachers.
4. The literacy teaching *repertoires* of the more effective and effective teachers included teaching practices that were most frequently observed such as attention or engagement, those that were frequently observed such as pace and metalanguage, and those such as challenge that were rarely observed in classrooms. On the other hand, the literacy teaching repertoires of the less effective teachers tended to be dominated by those teaching practices that were frequently observed in classrooms.

5. There was no quantitative difference between teacher groups for the teaching practice we called ‘explicitness-word’, that is, directing children’s attention to explicit word and sound strategies. The more effective, effective, and less effective teachers all paid some explicit attention to phonics. There were, however, distinct qualitative differences between the ways in which these groups of teachers taught phonics. Whilst the more effective and effective teachers generally used a highly structured approach to phonics teaching, they were usually observed teaching word level skills and knowledge within a wider context, such as a theme or topic being studied, a shared book, a writing lesson or a spelling lesson, so that the purpose of learning phonics was made clear and relevant. Further, these teachers provided extremely clear explanations of word level structures, and explanations that were of a higher order than those of the less effective teachers. They also provided careful scaffolding, including guided practice in a variety of contexts, to ensure that important phonic concepts were learnt. These teachers also kept a focus on broader text level features, with a particular focus on comprehension of texts.

## Acknowledgments

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The research underpinning *In Teachers' Hands* was made possible by the generous participation of schools, teachers, children and families across Australia. More than two thousand children in over 100 schools completed the *LLANS* assessments and their teachers completed questionnaire surveys. Eleven teachers and their classes welcomed the researchers for in-depth video analysis in classrooms and a further six teachers assisted with the public release video. We thank them all for their interest and commitment, and acknowledge that the program of research could not have been undertaken without their generous support.

The research, which was commissioned by the Australian Government Department of Education, Science and Training, sought to identify effective teaching and learning practices that lead to improved literacy outcomes in the early years of schooling. The team commissioned to do the work involved researchers from Edith Cowan University, The Australian Council of Educational Research (ACER) and the University of NSW. Marion Meiers (Senior Research Fellow, Australian Council of Educational Research) organised the adapted *LLANS* assessments and Dr Ken Rowe (Director, Learning Processes and Contexts, Research Program, ACER) analysed the *LLANS* data. Kathy Nolan (Research Officer, ACER) coordinated the dissemination and retrieval of the *LLANS* assessments. Mary Rohl prepared the literature review. William Louden and Mary Rohl developed the *Classroom Literacy Observation Schedule (CLOS)* to use in the classroom observations. William Louden, Mary Rohl, Caroline Barratt Pugh, Claire Brown, Helen House, Judith Rivalland (Edith Cowan University), and Trevor Cairney (New College, University of NSW) undertook classroom site visits in four states.

Claire Brown, Helen House and Jess Elderfield (ECU) spent many months contacting and visiting schools, preparing videos, analysing the quantitative and qualitative data and preparing the final drafts of the CLOS chapters. Their commitment, enthusiasm and constant good humour was an essential ingredient to the completion of the project.

The research team also wishes to thank the many 'project friends' who assisted and supported the team throughout the life of the project with questionnaire survey development and dissemination, data support for the analysis, editing of the video clips, publication, photographic and printing advice.

Members of the project Advisory Committee provided both sound advice and strong support in contacting stakeholders in schools, schools systems and sectors, throughout the life of the project. Members of the Advisory Committee were Ann Czulowski-McKenna (National Coordinator Literacy Research Projects), Christine Ludwig (Education Queensland), Kevin Comber (Catholic Education, SA), Bridie Raban (The University of Melbourne), Valerie Gould (The Association of Independent Schools of Western Australia Incorporated), Alison Jacob (Tasmanian Department of Education), The Victorian Primary Principals' Association and Phil Lambert (NSW Department of Education and Training).

Finally, we are grateful to the Australian Government's project management team, Murray Kimber, Mary Falvey, Betty Agius and Carolyn Stanistreet who were friends and supporters of the project over four years. We thank them all.

William Louden and Mary Rohl, Project Directors, Perth, May 2005

## Chapter 1: Effective literacy teaching in the early years of school

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Literacy teaching in the early years of school has been a contentious and intensively-researched subject, at least since the publication of *Learning to Read: The Great Debate* (Chall, 1967). Opinion on teaching methods has been highly polarised, particularly in terms of whether and how to teach children to ‘crack’ the alphabetic code of written English. Despite the plethora of early literacy teaching programs that have appeared over the years, the goal of success for all literacy learners remains elusive.

The political and social significance of early literacy teaching is shown by the high levels of government and school system intervention in the area. Phonetically explicit reading programs, for example, are mandated for beginning readers in some parts of the United States of America. In the United Kingdom, the widely implemented National Literacy Strategy contains explicit guidelines for beginning (as well as more advanced) literacy learners. Within the Australian context, there is also intense activity in terms of the development and implementation of particular methods of teaching literacy in the early years of school, as evidenced for example by the Victorian Early Years Literacy Program (Education Victoria, 1997) and the New South Wales State Literacy Plan (NSW Department of Education and Training, 2001).

Against this background of intense activity, there continues to be a diversity of opinion - sometimes characterised as the ‘reading wars’ - between advocates of a whole language meaning-oriented approach to teaching beginning reading and advocates of a phonics or word level approach. In addition to the controversy surrounding the teaching of early literacy, the definition of literacy itself is also open to debate. In some contexts it is seen as being confined to reading, in some as confined to reading and writing and in other contexts it has a much broader definition. The Australian Government has defined literacy broadly as:

the ability to read and use written information, to write appropriately, in a wide range of contexts, for many different purposes, and to communicate with a variety of audiences. Literacy is integrally related to learning in all areas of the curriculum, and enables all individuals to develop knowledge and understanding. Reading and writing, when integrated with speaking, listening, viewing and critical thinking, constitute valued aspects of literacy in modern life. (DEETYA, 1998, p. 7)

This is the definition that we adopted for the study, although as became apparent in the course of the project, in most of our early years classrooms it was defined operationally in somewhat narrower terms.

### **What did we want to find out and how did we do it?**

The purpose of this study was to identify effective teaching practices that lead to improved literacy outcomes for children in the early years of school. It aimed to build an evidential link between children’s growth in English literacy in the early years of school and their teachers’ classroom practices. The study approach combined quantitative and qualitative research strategies in eight phases.

We began with a review of the literature on effective teaching, literacy teaching and learning, and effective teaching of literacy, in particular early literacy. Based on findings from this literature review, we developed a classroom literacy observation schedule. At the same time as we were reviewing the literature and developing our observation tool, the literacy skills and abilities of a nationally representative sample of children in their first and second years of school was assessed. Following these assessments ‘value added’ analyses were made in order to identify three groups of teachers; those who were more effective, those who were as effective, or those who were less effective than

expected, based on differences in class/teacher-level estimates of student growth in literacy.

Once the groups of teachers (more effective, effective and less effective) had been identified on the basis of their students' literacy growth, we invited sub-samples of each group to participate in the classroom observation phase of the study. This involved a site visit to each teacher's classroom by two of the research team to make videotaped records of literacy teaching and to interview the teacher. After the site visits had been completed video records of a representative sample of literacy activities in each observed classroom were coded using the observation schedule. We analysed the coded video records in two ways. Firstly, we made a quantitative analysis of the data that included the frequency of each literacy teaching practice in the observed classrooms, confirmatory factor analysis of the literacy teaching dimensions, and Rasch analysis to estimate teacher effectiveness in terms of a teacher's repertoire of literacy teaching practices. Secondly, we made a qualitative cross-case analysis of the video records and accompanying transcript in terms of each of the literacy teaching practices for the more effective, effective and less effective teachers. The cross-case analysis was made in order to find out how teachers from these groups enacted each literacy teaching practice in the classroom.

## **Overview of the Study**

### **What the literature told us**

A review of existing research literature was made in order to gain a theoretical perspective on effective teaching practices that lead to improved literacy outcomes in the early years of school. *Effectiveness* is defined for the purposes of this study as success in producing student achievement gains, although it is acknowledged that some definitions of teaching effectiveness also include 'success in socializing students and promoting their affective and personal development in addition to success in fostering their mastery of formal curricula' (Brophy & Good, 1986, p. 328).

Three bodies of research were examined in the literature review: research on effective teachers; literacy research with an emphasis on the teaching and learning of reading; and research on effective teachers of literacy, with particular reference to effective teachers of literacy in the early years of school. Since there are large established bodies of knowledge in the areas of effective teaching in general and literacy teaching in particular, the literature review for this study had a strong focus on recent international large-scale analyses of existing research.

The teacher effectiveness research indicated the crucial importance of the individual teacher in producing effective learning outcomes. It also indicated that effective teachers have a wide repertoire of teaching practices, which they are able to skilfully employ to suit the classroom context, their purposes and the needs of their students. The ways in which effective teachers are able to manage the many competing demands of the classroom have been likened to the skills of a juggler or to the conductor of a large orchestra. They individualise instruction in order to support and challenge students and they motivate students to participate in classroom activities, at the same time as they gain the respect of their students and skilfully structure activities and instruction. The literacy research indicated that a balanced literacy curriculum that is explicitly taught and which includes word and text level knowledge and skills, particularly phonemic awareness, phonics, fluency, comprehension and oral language in addition to varied classroom practice, leads to improved literacy outcomes. And the research into effective teachers of literacy, including beginning literacy, indicates that effective literacy teachers have a strong literacy knowledge base that they make explicit to their students, in addition to creating and making use of a rich literacy environment.

### **Identifying more effective, effective and less effective early years literacy teachers**

Identification of effective literacy teachers was based on assessments of growth in student literacy learning. A nationally representative sample of first and second year of school children in 200 classes was individually assessed near the beginning and end of one school year on the literacy assessment tasks developed for ACER's *Longitudinal Literacy and Numeracy Study (LLANS)*. The facets of literacy that were assessed included phonemic awareness, print concepts, children reading aloud, making meaning from text, and writing in response to text. 'Value added' analyses of the *LLANS* data were then carried out in order to identify class/teacher-level differences in students' literacy learning. Three groups of teachers were identified: those who were more effective, as effective, and those who were less effective than expected, based on prior achievement-adjusted, mean-point estimates of class/teacher-level residuals of children's *LLANS* assessments. The adjusted residuals for teachers identified as more effective were statistically significantly above the expected level, those for the teachers identified as less effective were significantly below the expected level, and those for the majority of teachers identified as effective were not significantly above or below the expected level.

Once the teachers had been classified in this way, we were able to approach potential participants from each of the three groups for participation in the intensive classroom observation phase of the study. As we had estimated learning gain over a school year, the classroom observations were made in the following school year when most teachers were teaching a different group of children. Schools were selectively approached in order to secure a balance of teacher effectiveness, school geographical location and size and socio-economic, ethnic and linguistic background of children. In order to ensure that teachers in the effective group could clearly be seen to be effective, only those teachers whose students' learning gain adjusted residual in standard deviation units was positive, that is they were ranked above the median of the group<sup>1</sup>, were approached.

Not all teachers and schools approached were willing to participate in the observation phase of the research project and some teachers were no longer teaching in the same school or were teaching in another year level. The final sample of teachers who were observed in their classrooms was made up of two more effective teachers, four effective teachers and four less effective teachers. Seven of the teachers' classrooms contained first year of school children (one of these also contained a few second year children), two contained second year of school children and one contained children from the first three years of school.

### **Observing more effective, effective and less effective early years literacy teachers in action**

Based on a synthesis of key findings from the research literature, the *Classroom Literacy Observation Schedule (CLOS)* was devised as a tool with which to observe effective teachers of early literacy. Thirty-three literacy teaching practices were classified into six broad dimensions. Some dimensions focus largely on teacher behaviours, while others also have a focus on the behaviours of children. The child behaviours are proxy indicators of teacher effectiveness in that it is the teacher who potentially has control over these child behaviours in the classroom. The six dimensions of CLOS are outlined:

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<sup>1</sup> Two teachers included as one case in the *effective* teacher group team-taught a class that contained children from the first three years of school. These teachers were ranked above the mean for their first year of school children and marginally below the mean for the second.



<b>Participation:</b>	Ways in which the teacher organises for and motivates children's participation in classroom literacy tasks
<b>Knowledge:</b>	Ways in which the teacher uses her <sup>2</sup> knowledge of literacy to effectively teach significant literacy concepts and skills
<b>Orchestration:</b>	Ways in which the teacher manages or orchestrates the demands of the literacy classroom
<b>Support:</b>	Ways in which the teacher supports children's literacy learning
<b>Differentiation:</b>	Ways in which the teacher differentiates tasks and instruction for individual learners, providing individual levels of challenge
<b>Respect:</b>	Ways in which the teacher gains the respect of the children and in which the children demonstrate respect for her.

In choosing the dimensions and associated teaching practices we took an agnostic approach in that we tried to include as many research findings as possible. In terms of the whole language/phonics debate we included explicit teaching at both word and text levels, along with the teacher's use of metalanguage within the knowledge and support dimensions.

The teachers in the three groups who had agreed to take part in the observation phase were each visited by two members of the research team for up to four days and their literacy teaching sessions were videotaped. After they had visited each school the two researchers selected a total of two hours of videoed teaching which best represented their period of observation in each class. This set of two-hour video samples and their corresponding transcriptions were linked and entered into the vPrism 3.056 research software (see: [www.lessonlab.com/vprism/](http://www.lessonlab.com/vprism/)). Each two-hour section of video was then coded by the research team in terms of the CLOS schedule of literacy teaching practices derived from the research literature, and also in terms of the literacy activities used by the teacher, such as shared book or modelled writing.

Quantitative analysis of the video coding data was then carried out. This included frequency of each of the CLOS literacy teaching practices in the observed classrooms, confirmatory factor analysis of the CLOS dimensions, and Rasch analysis to estimate teacher effectiveness in terms of a teacher's repertoire of literacy teaching practices. From the results of these analyses and analyses of the coded video materials, the researchers made qualitative cross-case analyses of the ways in which the more effective, effective and less effective teachers enacted each CLOS dimension in their classrooms.

### **Summary of the main findings from this study**

The *Classroom Literacy Observation Schedule* that we devised for the study was shown empirically to be appropriate for classroom observation of teachers' pedagogical practices.

The type of literacy teaching *activity* used by the teachers varied only slightly according to teacher effectiveness. Generally, the same few activities were widely used by all teachers regardless of their effectiveness. The more effective, effective and less effective teachers all extensively used generic early years literacy activities such as shared book reading, modelled writing and phonics teaching.

The literacy teaching *practices* that were contained in the *Classroom Literacy Observation Schedule* varied according to teacher effectiveness. Generally speaking, the more effective and effective teachers consistently demonstrated literacy teaching practices from all six dimensions of the schedule. The less effective teachers

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<sup>2</sup> All teachers who took part in the observational phase of this study were female.

demonstrated a limited number of literacy teaching practices that were also spread across the six dimensions of the *Classroom Literacy Observation Schedule*.

There was no difference between groups on the teaching practice we called 'explicitness-word', which concerned whether or not the teachers directed children's attention to explicit word and sound strategies. This was a common teaching practice for more effective, effective, and less effective teachers.

### **Identified characteristics of the more effective and effective teachers**

The more effective and effective teachers had highly developed classroom management skills, a variety of strategies for motivating children to participate in literacy activities and they made explicit to children their substantial knowledge of literacy in a variety of ways that included creating and using a rich literacy environment and concentrating on significant literacy concepts and skills.

The more effective and effective teachers provided a high degree of support for literacy as they persistently scaffolded learning, differentiated levels of challenge, instructions and tasks for individual needs and created a socially supportive classroom environment in which children demonstrated pleasure in learning.

The extensive literacy teaching repertoires of the more effective and effective teachers included teaching practices that were most frequently used, frequently used, and, in particular, those such as challenge that were rarely used by the teachers in the study.

Not only did the more effective and effective teachers demonstrate use of a larger number of literacy teaching practices than the less effective teachers, but there were also qualitative differences between the groups in the ways in which they implemented the practices. For example, when using the practice of modelling the more effective and effective teachers' metacognitive explanations were at more sophisticated levels than those of the less effective teachers.

The more effective and effective teachers were frequently observed in structured teaching of phonics, usually within a wider context such as a theme or topic being studied, a shared book, a writing lesson or a spelling lesson, so that the purpose of learning phonics was made clear and relevant. Further, these teachers provided extremely clear explanations of word level structures that were of a higher order than those of the less effective teachers and they provided careful scaffolding, including guided practice in a variety of contexts, to ensure that important phonic concepts were learnt. These teachers also kept a focus on text level features, with a particular emphasis on comprehension of texts.

### **Identified characteristics of the less effective teachers**

The less effective teachers as a group did not have highly developed classroom management skills, they did not motivate children to participate in literacy activities and, whilst they provided some explanations of literacy concepts, their often unclear explanations suggested that these teachers took a limited view of early literacy teaching as evidenced by their provision of 'busy-work' activities.

The less effective teachers did not provide a high degree of support for literacy in terms of scaffolding learning, challenging children and differentiating instructions and tasks for individual needs, nor did they generally create a socially supportive classroom environment or pleasure in learning.

The narrower literacy teaching repertoires of the less effective teachers were, for the most part, limited to those teaching practices most frequently observed. Whilst these

teachers may have been able to gain the children's attention, the children were less likely to be engaged in the literacy task. It was even less likely that the task would involve substantial literacy learning and most unlikely that it would challenge the children.

On the whole, when implementing their narrower repertoire of literacy teaching practices, the less effective teachers demonstrated these practices at a different level from the more effective and effective teachers. For example, these teachers' purposes tended to be of a lower order than those of the more effective and effective teachers and were more likely to be of a routine, rather than of a substantive nature.

Like the more effective and effective teachers, the less effective teachers were frequently observed teaching phonics. Nevertheless, the less effective teachers were more likely to teach phonics as an isolated activity that was presented as an end in itself, rather than as a means to understanding or using text. Further, these teachers' explanations were sometimes not very clear, at times confusing for the children in their classes, and erratically focused. These teachers also tended to place little emphasis on comprehension of text.

## Chapter 2: Perspectives from the literature

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The art of teaching is rooted in the experience, skill, judgment, and intuition of the teacher dedicated to the best interests of the students he or she serves, while the scientific knowledge revealed by effective, contextually relevant research forms the rational knowledge base for instructional decisions (Farstrup, 2002, p. 1).

The purpose of this literature review is to provide an overview of research into effective literacy teaching and learning practices in the early years of school. It has guided the development of the *Classroom Literacy Observation Schedule (CLOS)* that was used as a tool to examine the practices of 200 teachers who were identified as 'more effective than expected', 'as effective as expected' and 'less effective than expected' on the basis of a value added analysis of their students' assessment data. Effectiveness is defined in this study as success in producing student achievement gains, with particular reference to literacy achievement gains. It should, however, be noted that definitions of effectiveness in terms of teaching in schools usually include 'success in socializing students and promoting their affective and personal development in addition to success in fostering their mastery of formal curricula' (Brophy & Good, 1986, p. 328). Nevertheless, in this chapter, whilst there is some reference to social and emotional factors these are examined in terms of their relationship to other factors, such as home background, that have been associated with literacy achievement.

The literature on literacy teaching and learning is very well developed. Internationally much of this has focused on the reading component of literacy and there have been several high profile major reviews of the literature on the teaching of reading (National Reading Panel, 2000; Snow, Burns & Griffin, 1998). In Australia, there have been various government commissioned studies of children's literacy, as well as much work by individual researchers.

The literature concerning influences on student achievement in school is also very well developed in terms of factors such as the students themselves, their home backgrounds, schools, school principals, peers and teachers (Hattie, 2003). Nevertheless, in a synthesis of over half a million studies of the effects of these variables on student achievement, Hattie has shown that whilst all contribute something to student achievement, 'excellence in teaching is the single most powerful influence' (Hattie, 2003, p. 4). This variable in the learning process has also been referred to as 'quality of instruction' (Bloom, 1976) and 'teacher behaviour' (Brophy & Good, 1986).

Whilst, according to Farstrup (2002), the importance of the teacher in young children's success in learning to read was identified nearly 40 years ago (see Bond & Dykstra, 1967) these two bodies of research - literacy teaching and learning and teacher effectiveness - have for the most part developed in isolation from each other and have not until relatively recently been combined. In this chapter three bodies of research will be examined: literacy research, with an emphasis on the teaching of reading, research on effective teachers, and research that focuses on effective teachers of literacy, with particular reference to effective teachers of literacy in the early years of school.

### **Literacy teaching and learning**

There is an enormous amount of literature in the area of literacy teaching and learning. An examination of public databases by the U.S. National Reading Panel revealed that approximately 100,000 research studies on the teaching of reading, which is just one aspect of literacy, have been published since 1966 (NRP, 2000). In view of the large established body of knowledge the literature review for this study will have a strong focus on recent large-scale analyses of existing research. It will begin with an examination of two U.S. government funded analyses of the literature conducted by

groups of leading researchers in the field, which have had a huge impact on U.S. federal government policy. There will also be analyses of other large literature reviews in the area that are less constrained by political context, such as those in the *Handbook of Reading Research* (Kamil, Mosenthal, Pearson, & Barr, 2000), the *Handbook of Early Literacy Research* (Neuman & Dickinson, 2001), *What Research has to Say about Reading Instruction* (Farstrup & Samuels, 2002) and the research-based *Best Practices in Literacy Instruction* (Morrow, Gambrell & Pressley, 2003). In order to provide contextual detail a number of individual studies that are particularly related to the present study are also discussed.

### **Literacy learning in Australia**

In a review of reading research in Australia and New Zealand, Wilkinson, Freebody and Elkins (2000) point out that in Australia 'reading' as a topic for study and practice has been subsumed under 'literacy' and is broadly defined. In line with this the Commonwealth government has defined literacy in the Australian context as:

the ability to read and use written information, to write appropriately, in a wide range of contexts, for many different purposes, and to communicate with a variety of audiences. Literacy is integrally related to learning in all areas of the curriculum, and enables all individuals to develop knowledge and understanding. Reading and writing, when integrated with speaking, listening, viewing and critical thinking, constitute valued aspects of literacy in modern life (DEETYA, 1998, p. 7).

Wilkinson *et al.* (2000) suggest that the focus on literacy rather than reading can be largely attributed to research in the Australian context by linguists, ethnographers and cultural theorists (in addition to psychologists and educationalists). They point out two important features in the history of literacy education in Australia: its culturally and linguistically diverse environment; and the tendency in schools and preservice teacher education programs to work with a variety of pedagogical methods and materials.

Further, Wilkinson *et al.* (2000) examine recent trends and issues in literacy education in Australia, using the terms 'skills' and 'cultural' approaches that were adopted by Christie, Devlin, Freebody, Luke, Martin, Threadgold, *et al.* (1991). For skills approaches they cite the work of Australian researchers in the areas of phonological awareness (for example, Bowey, 1996) and implementations of the Reading Recovery program (for example, Centre, Wheldhall, Freeman, Outhred, & McNaught, 1995). They also discuss how national and state testing involves various facets of literacy and is largely based on the Rasch scaling model (see Masters & Forster, 1997), rather than on traditional psychometric theory. To illustrate cultural approaches to literacy learning in Australia Wilkinson *et al.* use exemplars of Commonwealth funded Children's Language and Literacy Projects in which literacy is defined as 'a set of cultural practices' that is studied in naturalistic settings, sometimes through combinations of quantitative and qualitative research methodologies. Reference is also made to research on critical literacy (for example, Luke, 1994) and gender issues (for example, Alloway & Gilbert, 1997).

Whilst not specifically mentioned by Wilkinson *et al.* (2000), the 'four resources' model of literacy put forward by Luke and Freebody (1999), has been widely accepted by curriculum writers, teacher educators and practitioners in the English learning area. In this model, skills and cultural approaches are reconciled in that the four resources of decoding, participation in the meanings of text, functional use of text, and critical analysis of text are all seen as necessary, but not sufficient in and of themselves, for effective literacy in present day society.

In March 1997 the Commonwealth, State and Territory Education Ministers agreed to the national literacy and numeracy goal 'that every child leaving primary school should be numerate, and able to write and spell at an appropriate level'. They added the subgoal

‘that every child commencing school from 1988 will achieve a minimum acceptable literacy and numeracy standard within four years’ (DEETYA, 1998). Thus, there is nationally an emphasis on the literacy and numeracy achievements of Australian children in the primary school years, with particular emphasis on the early years of school and the attainment of benchmark standards by all children at particular points in time. Whilst the Commonwealth government has stated that it wants to see improved educational accountability, it sees this accountability as being ‘undertaken cooperatively, not imposed from above and in ways that collect information of real use to schools, teachers and parents as well as governments’ (DEETYA, 1998, p. 5). It also encourages greater autonomy for schools as this creates the freedom for individual schools to ‘improve their teaching and learning that they do not have under centralised systems’ (p. 6).

Through the Children’s Language and Literacy Program the Commonwealth government commissioned various literacy (and numeracy) research projects in order to discover how children might be assisted to reach benchmark standards. Three reported on the home literacy practices of children and found that Australian families engaged in a wide range of literacy practices. However, the ways in which literacy was constructed in some homes was very different from the ways in which it was constructed by the school and this mismatch was associated with learning difficulties for particular children (Breen, Loudon, Barratt-Pugh, Rivalland, Rohl, Rhydwen *et. al.*, 1997; Cairney & Ruge, 1998; Cairney, Ruge, Buchanan, Lowe, & Munsie, 1995).

Other Commonwealth commissioned literacy projects have examined ways in which children from different cultural and linguistic groups, who could be seen to be educationally disadvantaged, might be helped to acquire English literacy, either through instruction in English (Breen, Barratt-Pugh, Derewianka, House, Hudson, Lumley & Rohl, 1997), or through different forms of bilingual education (McKay, Davies, Devlin, Oliver, & Zammit, 1997). Research into Distance Education and the education of Indigenous children in desert schools highlighted some of the difficulties and dilemmas facing schools and families in rural and remote areas (Clayton, Barnett, Kemelfield, & Mulhauser, 1996; Loudon & Rivalland, 1995). Two other project reports that are particularly pertinent to the issue of effective strategies for early literacy learning and teaching are *100 Children go to School* (Hill, Comber, Loudon, Rivalland, & Reid, 1998) and *Mapping the Territory* (Loudon, Chan, Elkins, Greaves, House, Milton, Nichols, Rohl, Rivalland & van Kraayenord, 2000). These projects address, respectively, the transition from home/care environments to school and the education of primary school students with learning difficulties in literacy and numeracy.

Whilst many of the Australian research projects mentioned so far have been commissioned by the Commonwealth government, State governments have also been active in resourcing literacy projects. Of particular interest is the work by Luke and colleagues for Education Queensland (see Luke, 2003). Luke cites the baseline data from the *Literate Futures* project (Luke, Freebody, & Land, 2000) as showing that in Queensland there is ‘no crisis in early literacy’ (p. 16), although the needs of children living in ‘spatialised poverty’ did not appear to be met. A matter of concern to the researchers was that teachers had received no systematic professional development in reading over the previous ten years and appeared not to have the capacities with which to diagnose children’s reading difficulties in the early years of school, nor did they have a shared vocabulary with which to discuss reading. At the school level it was found that there were few systematic programs for literacy, some very ‘unbalanced’ programs that focused on ‘basic skills’ only and various ‘pull-out’ programs for children not succeeding in literacy that were not coordinated within the school. Other findings showed that there was little literacy teaching across the curriculum, confusion about the

use and teaching of multiliteracies and an age split of teachers with little intergenerational exchange and dialogue around literacy.

These findings are combined by Luke (2003) with those from the Queensland School Reform Longitudinal Study (Lingard, Ladwig, Mills, Bahr, Hayes, Gore, *et al.*, 2001), to give a more complete picture of Queensland classrooms. One thousand middle to upper primary and secondary classrooms were observed and coded for intellectual quality, relevance, supportive classroom environment and recognition of difference, using the Productive Pedagogies framework (Education Queensland, 2002). Findings suggested that whilst classrooms were socially supportive they were not connected to the real world, teachers were struggling with recognition of difference and the tasks assigned to students often required only low levels of intellectual engagement, what Luke (2003) calls 'dumbing down' (p. 24).

Much of this government commissioned literacy research has been predominantly qualitative in nature, although a few studies have included some quantitative data analysis, and for the most part it has examined literacy as cultural practice in naturalistic settings. Nevertheless, as Wilkinson *et al.* (2000) have shown, there is also a strong quantitative tradition in Australian literacy research. Two areas that are of particular interest to the present study are educational testing (for example, K. W. Rowe & Hill, 1996) and early literacy learning (for example, Bowey, 1996; Byrne & Fielding-Barnsley, 1995; Rohl & Pratt, 1995; Share, Jorm, Maclean, & Matthews, 1984; Tunmer, Herriman, & Nesdale, 1988).

### **Reading/literacy research**

Much of the internationally published research into early literacy has been conducted in the United States and has been quantitative in nature. The United States has some contextual features that have influenced research directions in early literacy teaching and learning. Firstly, reading is the component of literacy that has been the main focus of teaching methodology and opinion as to the 'best' methodology has been highly polarised since the publication of *Learning to Read: The Great Debate* (Chall, 1967). Secondly, the teaching of beginning reading is a highly political issue. Teale and Yokota (2001) begin their review of the literature with, 'Likely no area of American education has been as fraught with controversy, confusion, fads, and politics as the teaching of beginning reading and writing' (p. 3). Hiebert and Taylor (2000) point out that teaching methodology for beginning readers is the source of mandates by state and federal legislators. Thirdly, the teaching of beginning reading is set against a background of high stakes testing for the purpose of accountability. President George Bush has stated: 'The heart of education reform is accountability' (*Reading Today*, 2001, Vol. 18, 5, p. 1). His 'No Child Left Behind' education policy rewards states and schools that are successful in improving reading outcomes and sanctions failure in terms of withdrawal of funding (NRP, 2000). Finally, there is federal funding to US states for 'science-based reading programs' in grades K-2 in the *Reading First* initiative (NRP, 2000).

In recent years two large influential reports, both commissioned by U.S. government agencies, have examined existing research into the teaching and learning of reading. These are the National Research Council's *Preventing Reading Difficulties in Young Children*, edited by Snow, Burns and Griffin (1998), and *Teaching Children to Read* (NRP, 2000). There are many similarities between the two studies. The methodology of both is said to be 'scientific' and both have been extremely influential in the U.S. context. The findings of the two reports are analysed and synthesised here in terms of what has been shown empirically and repeatedly to be important in early literacy learning.

*Preventing Reading Difficulties in Young Children* (Snow *et al.*, 1998) was commissioned by the U.S. Departments of Education and Health and Human Services. These federal departments requested the National Academy of Sciences to establish a committee whose function was to examine the prevention of reading difficulties through a study of the 'effectiveness of interventions for young children who are at risk of having problems learning to read' (Snow *et al.*, 1998, p. 1). Whilst the impetus for the study was children 'at risk', the committee made reading development and factors that contribute to reading outcomes the main emphases of their research review. Indeed, they conclude that their recommendations 'extend to all children' and that 'good instruction seems to transcend characterisations of children's vulnerability for failure' (Snow *et al.*, 1998, p. 2).

Snow *et al.* (1998) define the 'scientific' methodology that was used in the study as 'publicly verifiable knowledge' based on testable theories, through the employment of methods of 'systematic empiricism' (p. 34). These methods included case, correlational, experimental and epidemiological studies, narrative analyses, interviews, surveys and ethnographies and the researchers looked for 'converging evidence' where studies using various methodologies reported similar findings. The areas addressed in the study that are particularly pertinent to the present study include: conceptualising reading and reading instruction, early identification of children at risk of developing reading difficulties; early childhood initiatives and interventions; the mechanics of reading; comprehension; the use of computer technology in the teaching of reading; and teacher education.

The National Reading Panel (NRP, 2000) which produced the report *Teaching Children to Read*, developed what it called an 'evidence-based assessment of the scientific research literature on reading and its implications for reading instruction' of the type normally used in research studies on the efficacy of interventions in psychological and medical research for 'fostering of robust health or psychological development and the prevention or treatment of disease' (NRP, 2000). A decision was made to concentrate on the following topics: alphabets (phonemic awareness and phonics instruction); fluency; comprehension including vocabulary; teacher education and reading instruction; and computer technology and reading instruction. Subgroups of researchers were formed to study each topic and subtopic in order to identify 'effective instructional reading approaches' and to determine their readiness for classroom application.

The Panel then decided upon a stringent set of criteria for inclusion of studies in the analyses that included use of an experimental or quasi-experimental design with a control group or multiple-baseline method, reading behaviour (preschool to grade 12) as the outcome, and publication in English in a refereed journal. Reading behaviour was defined as reading real or nonsense words, reading text aloud or silently, and comprehending text read silently or aloud. Where the subgroup was able to locate a sufficient number of studies that satisfied the strict criteria, a statistical meta-analysis was conducted and an effect size for the particular facet of reading under investigation was calculated. The subgroups categorised an effect size of 0.20 as 'small', 0.50 as 'moderate', and 0.80 and above as 'large' (see Tymms, 2000, for a discussion of effect sizes).

## **Reading research findings**

### **Conceptualising reading/early literacy development and reading instruction**

Snow *et al.* (1998) point to the complex nature of the reading process and propose that initial instruction requires children to: use reading to obtain meaning from print; have frequent opportunities to read and write; understand the structure of spoken words and the alphabetic principle of the English writing system; and be exposed to frequent, regular spelling-sound relationships. They also found that, in order to make progress



beyond the initial stages, children need a working knowledge of how sounds are represented alphabetically, reading fluency that comes from practice in reading a variety of texts, control over procedures for comprehension monitoring, interest and motivation.

#### **Mechanics of reading: Phonemic/phonological awareness**

Both the National Reading Panel (2000) and Snow *et al.* (1998) examined the role of phonemic awareness (awareness of the sound units of language) in early reading and found it to be a significant predictor of future reading achievement. The National Reading Panel point out that phonemic awareness and letter knowledge have been identified as the two best school entry predictors of reading in the first two years of instruction. Meta-analysis of the effectiveness of phonemic awareness instruction showed reading and spelling outcome effect sizes following training in phonemic awareness were in the moderate range. Nevertheless, the Panel points out that, whilst these results are ready for implementation in the classroom, there are many ways to teach phonemic awareness effectively and that motivation for learning literacy is essential. Further, it cautions that, although phonemic awareness provides essential foundational knowledge in the alphabetic system, it is only one component within a complete and integrated reading program.

#### **Mechanics of reading: Phonics**

The National Reading Panel defined *phonics instruction* as 'a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use in reading and spelling' that may be provided 'systematically or incidentally'. *Systematic phonics* requires that 'a sequential set of phonics elements is delineated and these elements are taught along a dimension of explicitness depending on the type of phonics method employed'.

In support of phonics instruction Snow *et al.* conclude that there is converging research evidence that getting started in reading 'depends critically on mapping the letters and spellings of words onto the sounds and speech units that they represent' (p. 321) and that explicit phonics instruction helps children understand the alphabetic principle. Snow *et al.* interpret research findings as showing that improvement in word reading skill is positively related to the degree of explicitness of instruction, particularly for children who begin a program with low phonological skills.

The National Reading Panel conducted meta-analyses of instructional programs, and as with phonemic awareness, found the mean overall effect size for phonics instruction to be moderate. Findings were interpreted as indicating that systematic phonics instruction is a valuable and essential part of a successful classroom reading program, but stressed that phonics is only part of a total program and should be integrated with other instruction in phonemic awareness, fluency and comprehension to create a complete reading program.

#### **Mechanics of reading: Fluency**

*Fluency* is defined as 'the ability to read a text quickly, accurately, and with proper expression' (NRP, 2000). This ability has been described by Allington (1983) as 'the most neglected' reading skill. Snow *et al.* claim that fluency in reading a variety of texts is one of several skills that are most important for progress in reading past the earliest stages and they propose that activities for improvement include practice in reading, including rereading of texts. The National Reading Panel considers fluency to be one component of skilled reading that helps comprehension and memory for text and observes that it is often neglected in school settings. Meta-analysis of the effectiveness of guided repeated oral reading showed effect sizes to be moderate. The Panel concludes that guided repeated oral reading procedures have a significant and positive effect on word recognition, fluency and comprehension for students of all ages in both

mainstream and special education settings and that these results are ready for implementation in the classroom.

### **Comprehension**

In their analyses Snow *et al.* and the National Reading Panel examined the development of reading comprehension. The National Reading Panel's definition of comprehension is that of Harris & Hodges (1995) namely, 'intentional thinking during which meaning is constructed through interactions between the text and reader'. Vocabulary instruction and instruction in controlling comprehension processes are addressed in both studies. Snow *et al.* concluded that children's word knowledge and reading comprehension could be improved through vocabulary instruction. The National Reading Panel concluded that vocabulary instruction, when appropriate to the age and ability of students, leads to gains in comprehension and that a combination of methods such as repetition and multiple exposures to words, the use of computers and incidental learning in context, all help to enhance vocabulary learning.

In examining instruction in text comprehension Snow *et al.* focus strongly on meta-cognitive techniques which, according to the National Reading Panel (Chapter 4, p. 69), involve 'teaching readers to become aware of when they do understand, to identify when they do not understand, and to use appropriate fix-up strategies'. Snow *et al.* conclude that, in order to prevent reading difficulties, in the early years of school 'formal instruction in reading needs to focus on the development of two sorts of mastery: word recognition skills and comprehension' (p. 322), that is the word and text level components of reading. The National Reading Panel found that instruction in a combination of reading comprehension strategies leads to increased learning of strategies as well as comprehension-related skills, and sometimes leads to general improvement in comprehension.

### **Teacher education and reading instruction**

Snow *et al.* view the teacher as critical in the prevention of reading difficulties and state that effective instruction includes 'artful teaching' that may well make up for the limitations of particular instructional strategies. They refer to research studies that suggest 'outstanding' teachers have been characterised as 'effectively and deliberately planning their instruction to meet the diverse needs of children in a number of ways' (p. 196). This involves 'masterful' management of the classroom and the creation of a 'literate environment'.

Snow *et al.* view the teacher's knowledge base and experience as being vital and teacher education as a 'career-long continuum of development' (p. 293). They outline what they perceive as essential literacy-related knowledge for effective teachers of reading. This includes detailed knowledge about language and literacy systems and processes, assessment, adapting the curriculum for individual needs, the reading curriculum, creating positive attitudes to reading and using research findings from different research paradigms to inform practice. They justify the importance of ongoing teacher education through a study of school districts that concluded the most effective use of school resources was to improve the qualifications of teachers (Ferguson, 1991). Likewise, the National Reading Panel found that inservice professional development resulted in significantly higher student achievement, at least in the short term.

### **Computer technology and reading instruction**

Snow *et al.* see the use of computers as 'promising' in terms of teaching children to read and in preventing reading difficulties. The National Reading Panel proposes several computer applications as showing promise for the teaching of literacy, in particular the addition of speech to on-screen text, hypertext and word processing functions for writing.

### **Family and community factors and interventions**

In their focus on children at risk of reading difficulties, Snow *et al.* examine the role of the family and community in children's learning. They point out that in the U.S. children from poor families and minority populations in inner city schools are at much greater risk of reading difficulties than are middle-class, European suburban children. Children from poor families may use non-standard varieties of English or have limited proficiency in English, which may make it difficult for them to take full advantage of reading instruction in English and to demonstrate their skills and knowledge when tested in English. However, Snow *et al.* located research studies that suggest limited proficiency in English may not be the only cause of low reading achievement for these children (for example, Slavin & Madden, 1995). They suggest that cultural difference may be responsible for a 'mismatch' between schools and families in terms of teaching practices and the ways in which literacy and the roles of parents and teachers are defined and practised (for example, Heath, 1983; Jacob & Jordan, 1987). Alternatively, low achievement may be the result of low motivation and educational aspirations in view of limited opportunities for these families (for example, Ogbu, 1982) and home conditions that do not provide a foundation for young children's emerging literacy (for example, Purcell-Gates, 1996).

### **Reading research: Critique and summary**

Whilst the National Reading Panel report has found strong U.S. government support, it has also received strong criticism. In her 'minority view' Joanne Yatvin, a Panel member claimed that the Panel took an 'unbalanced' and narrow conceptualisation of reading, pointing out that no research was included on broader aspects of literacy, such as language development, early literary knowledge or concepts about print. Since the publication of the report such criticism of the narrow approach taken by the Panel has grown as findings have been used by federal and state government authorities in the U.S. to determine policy (see Lyon, Shaywitz, Chhabra & Sweet, 2004, for a description of U.S. government policy based on the report).

The Panel's positivist methodology has been criticised by Cunningham (2001) in that its methodological standards were imposed upon the research literature on reading, with the result that much of it was ignored (p. 327). Cunningham further criticises the Panel's non-adherence to its own stringent criteria in its choice of research methodology and its metaphor of the teaching of reading as being similar to the treatment of physical or psychological illness. Nevertheless, he does not automatically reject the findings of the Panel. Rather, on the basis of 'professional wisdom' and a wide range of research literature he accepts the findings that phonemic awareness and systematic phonics instruction are important components of early reading programs and that guided oral reading and repeated reading increase fluency. He does, however, question on methodological grounds the validity of the Panel's inconclusive findings about text comprehension instruction, independent silent reading, computer technology and teacher education.

Cunningham's greatest concerns are for the practical implications of the Panel's findings in terms of their effects on educational funding, classroom practice and censorship of journal articles and conference papers. Some of these concerns are shared by Edmonson and Shannon (2002) who highlight what they see as the negative impact of the Panel's findings for the U.S. government's Reading First initiative, with the result that large amounts of funding have been allocated for schools whose reading programs are 'anchored in scientific research' that is, structured programs based on phonemic awareness, phonics, guided oral reading and comprehension. Edmonson and Shannon cite the case of a school district that excluded silent reading from its reading program on the grounds that silent reading was not a recognised part of a 'research-based program in line with state and federal guidelines' (p. 452).

The concern for the ramifications of government policy in the area and the call for a wider view of literacy are shared by many, including Taylor, Anderson, Au and Raphael (2000) who see a good literacy curriculum as existing within a broad social context that has the potential to help or hinder children's acquisition of reading and writing. They envisage the literacy curriculum as including most of the facets identified by the Panel, with the addition of language conventions, literary aspects, composition and ownership, all within the context of the school curriculum, teachers and classroom teaching, the school, the family and community, and society.

Snow *et al.* also took a broader perspective than that of the National Reading Panel. They investigated a larger number of factors and analysed research studies that took various theoretical positions and employed a variety of research methodologies. These factors are seen as vital by Taylor *et al.* (2000), in their claim that U.S. educators, policy makers and the general public are seeking 'a single, simple solution, such as directly teaching phonics, to the real and complex problem of improving the reading of young children in high-poverty schools' (p. 23).

Some caution is needed when generalizing the findings of the U.S. reading research studies to the Australian context in that their focus was reading rather than literacy, so it would be expected that other factors would also be important for literacy teaching and learning within the context of Australian schools. It is noted that in such research the quality of the findings depends on the quality of the outcome measures used and, in the U.S., reliance has tended to be on multiple-choice measures of reading (though see Paris & Hoffmann, 2004, for descriptions of some current broader U.S. early literacy assessments). It is likely that such narrow testing would be strongly related to narrow methods of teaching reading, such as isolated word recognition and decoding, and may not generalise as strongly to the broader conception of literacy as it is defined in Australian school curricula. It should also be noted that, according to international studies (see, for example, Thomson, Cresswell & De Bortoli, 2004), the current reading literacy achievements of U.S. students are well below those of their Australian counterparts. It is possible that this disparity of achievement levels also may have an impact on research findings in the two contexts.

Nevertheless, bearing in mind these criticisms and cautions it can reasonably be concluded that the particular factors identified in the extensive studies of reading are important in early years reading/literacy learning and teaching. The National Reading Panel identified phonemic awareness, phonics, fluency in terms of guided oral reading, comprehension, and teacher professional development as having significant positive effects upon children's reading achievement. And, given the fact that learning to read in English has been found to be more difficult than in most other European languages because of its syllabic complexity and orthographic depth (Seymour, 2001), it seems that decoding and fluency are areas of particular importance in the early stages of literacy learning. An overview of the findings of the National Reading Panel and some details of their analyses can be found in Table 2.1.

Table 2.1 Overview of National Reading Panel study of reading interventions (NRP, 2000)

Teaching focus	Examples of studies meeting criteria	Type of analysis	Effect size of intervention	Overall Findings	
Phonological awareness	Byrne & Fielding-Barnsley, 1991; 1993; 1995	Meta-analysis	Reading Spelling	0.53 0.59	Cause of improvement in PA, reading and spelling
Systematic Phonics	Torgesen <i>et al.</i> , 1997; 1999 Santa & Høien, 1999	Meta-analysis	Overall	0.44	Benefits for children K-6 Most effective in K & 1 Synthetic phonics very effective
Fluency: Guided oral reading	Labbo & Teale, 1990 Reutzel & Hollingsworth, 1993	Meta-analysis	Reading accuracy	0.55	Positive effects on word recognition, fluency & comprehension for all grades and special education students
Comprehension: Vocabulary	Beck <i>et al.</i> , 1982 Wixson, 1986	General		NA	Gains in comprehension Combination of teaching methods most effective
Comprehension: Metacognitive strategies	Markman, 1977; 1979; 1981 Palincsar & Brown, 1984	General		NA	Positive effects on comprehension related skills and sometimes comprehension
Teacher Education	Duffy <i>et al.</i> , 1986; 1987 Brown <i>et al.</i> , 1995; 1996	General		NA	Inservice PD resulted in significantly higher student outcomes
Technology	Reinking, 1988	General		NA	Promising but inconclusive

Snow *et al.* concentrated their attention on the prevention of learning difficulties in the early years and identified a range of factors as being important in early literacy learning. A summary of some important elements of early years classroom literacy instruction that they identified can be found in Table 2.2. It will be seen that there is a good deal of overlap with the elements identified by the National Reading Panel.

Table 2.2 Focus of effective early reading instruction (Snow *et al.*, 1998)

Focus of initial instruction	Focus of later instruction
<ul style="list-style-type: none"> <li>• Understanding the alphabetic principle of the English writing system</li> <li>• Frequent opportunities to read and write</li> <li>• The structure of spoken words</li> <li>• Using reading to obtain meaning from print</li> <li>• Exposure to frequent, regular spelling-sound relationships</li> </ul>	<ul style="list-style-type: none"> <li>• A working knowledge of how sounds are represented alphabetically</li> <li>• Reading fluency that comes from guided practice in reading a variety of texts</li> <li>• Control over procedures for comprehension monitoring and vocabulary instruction</li> <li>• Interest and motivation</li> </ul>

Snow *et al.* also identified some characteristics of effective teachers of early reading that are described later in this chapter in terms of teacher effectiveness and early literacy teaching.

Hiebert and Taylor (2000) have examined early intervention programs. From their analysis of previous intervention studies and literature reviews, and in the light of theoretical perspectives about instruction that supports reading acquisition, they make some observations about effective reading instruction that are in accordance with the findings of the reports by the National Reading Panel and Snow *et al.* Specifically:

- Receiving well-designed and focused instruction during the primary grades leads to higher levels of reading proficiency amongst a significant proportion of an age group that typically does not do well in ‘status quo’ instruction;
- Starting early, with activities that are developmentally appropriate seems to be effective;
- Opportunities for teachers to learn are an essential part of reading interventions.

### Findings from two related literacy research studies

Two DEST funded children’s literacy and numeracy projects have built on some of the reading research discussed. These are the *100 Children go to School* (Hill *et al.*, 1998) and *Mapping the Territory: Primary School Students with Learning Difficulties in Literacy and Numeracy* (Louden *et al.*, 2000).

The *100 Children go to School* project team set out to ‘explore the connections between literacy development prior to school and in the first year of formal schooling and to map the range of prior to school experiences in Australian states and territories’ (Hill *et al.*, 1998, p. 1). The methodology involved a three level design, namely: case studies of 20 children from three states; literacy assessment data from 100 children, including the case study children and some of their classmates in Year One; and case summaries where quantitative and qualitative data from the 20 children were combined.

In terms of home school connections Hill *et al.* found that the children in the project came to school with various literacy experiences and ‘funds of knowledge’ that prepared them differentially for the language and literacy environments of school. It was also found that in most school sites teachers did not have access to knowledge and resources that could enable them to build on the diversity of children’s prior knowledge. Despite the wide variety of children’s prior to school experiences, the researchers describe the similarity of preschool and first years of school environments, although in preschool children had more choice of space and use of time and materials than in school settings.

In terms of beginning to 'do' school the findings indicated that the children varied greatly in their analytical and strategic tools and dispositions to take on the ethos, culture and pedagogic routines of the classroom. In addition to becoming involved in classroom literacy instruction, children in the early years of school were required to learn ways of coping with a new environment that involved managing their own time, space, resources and bodies in accordance with school expectations of behaviour. Finally, whilst many aspects of pedagogy were examined, it was teacher talk, 'the particular ways of explaining with clarity and precision what is known about reading and writing that is critical' (p.13). Thus, important elements of effective literacy teaching identified in this study were teacher knowledge of children's home backgrounds, the ability to adapt the literacy environment for individual learners, helping children take on the routines of the classroom, and ensuring clarity of explanations of literacy concepts.

The *Mapping the Territory* project was commissioned in order to provide a national picture of how students who experienced difficulties in literacy and numeracy learning were supported in their schools and to identify successful strategies for addressing their literacy and numeracy learning needs. Five separate data collection strategies were developed: a literature review, mapping of system and sector provisions, surveys of preservice and inservice education, a survey of school-level provision, and a set of school case studies from five states, selected because some aspect of their provision for children with learning difficulties was believed to be exemplary.

Some of the study results are particularly pertinent to the present study. It was found that the significant minority of children in the case study schools who were identified by their teachers as facing difficulties with literacy and numeracy were an extremely varied group. Some children identified by their teachers at school entry, often on the basis of immaturity of oral language and general behaviour, were slow to make a start in formal learning, but when given appropriate early learning experiences, were able to catch up with their peers.

A number of elements of effective early learning experiences for literacy were identified. These included whole school commitment to these students, and effective 'first and second wave teaching' (see Clay & Tuck, 1991). It was found that good first wave classroom teaching in the early years, that has a strong focus on literacy and engages children's desire to learn, has the potential to help in the prevention of difficulties in literacy and numeracy. Components of effective first wave, regular classroom teaching that were found to be important for these children and some additional factors for early intervention were identified. Additional factors found to be important to first wave teaching and early intervention included regular assessment of literacy progress and a balance between the explicit teaching of skills, and reading and writing connected text at each child's individual level.

### **Reading/literacy research: Conclusions**

From this analysis of research literature on reading and literacy instruction, various factors have been identified that appear to be important in literacy teaching. In reading research there is a heavy emphasis on quantitative methodology that leads to overwhelming evidence in support of the teaching of particular facets of reading, specifically the word level alphabetic components of phonemic awareness and phonics; the broader text level component of comprehension that includes vocabulary knowledge; and fluency, a component of both word and text levels, that may be achieved through guided practice in reading aloud. There is also evidence for the importance of systematic, focused instruction in alphabetic skills. Additionally, there is some support for recognition of community practices, activities that address oral language, a balanced approach to reading, the provision of guided practice of skills and a variety of motivating, interesting experiences. Other findings are the need for focused attention on

students who make a slow start in learning to read and the importance of teacher professional development.

Results of the two DEST studies, which took a wider view of literacy than just reading and employed a range of research methods, confirm some of the findings from the reading research studies. Additional factors that seem to be important in early literacy classrooms are clarity of explanations, knowledge of children's home backgrounds, adapting the literacy environment for individual differences, establishing classroom routines, teacher talk that includes clarity of explanations of literacy concepts, and regular assessment that guides planning.

### **Key components of effective reading/literacy programs**

#### Content knowledge

- Balanced literacy curriculum that includes word and text level knowledge, with particular reference to phonemic awareness, phonics, fluency, comprehension and oral language

#### Classroom practice

- Systematic, explicit and focused instruction
- Guided practice of literacy skills
- A variety of motivating, interesting literacy experiences
- Diagnostic teaching of literacy in terms of regular assessment that guides planning
- Adapting the literacy environment for individual differences, including focused attention on students who make a slow start in literacy learning
- Precise teacher talk that includes clarity of explanations of literacy concepts
- Recognition of community knowledges and individual children's home backgrounds
- Establishment of classroom literacy routines
- Teacher professional development that increases teachers' knowledge of reading/literacy

### **Teacher effectiveness research**

Research into teacher effectiveness is the second body of knowledge examined in this chapter. As teachers work within a school context it could be assumed that schools have the potential to effect changes in literacy outcomes for students. In recent times there has been a growing interest in a whole school approach to producing significant improvements in student outcomes (Louden *et al.*, 2000). The research area of school effectiveness is relatively new and during the past three decades has become sophisticated in the types of data collected and the statistical modelling techniques applied (Goldstein, Huiqi, Rath, & Hill, 2000; Scheerens & Bosker, 1997). Hill and Rowe (1996) found considerable variation across Australian primary schools in student achievement in English and mathematics in both unadjusted achievement and achievement adjusted for student intake and prior achievement. In their study school effects accounted for 16 to 18% of the total variance in student achievement.

Nevertheless, there has been a good deal of debate in the literature as to exactly which school-related variables influence student achievement. Darling-Hammond (2000) describes how a growing body of research shows that a substantial proportion of school effectiveness data can be attributed to teachers and that teacher effects are cumulative and additive. In reviewing the research literature she claims that effective teachers are those able to use a range of teaching strategies and interaction styles, adjusting them to the needs of different students and the demands of instructional goals, topics and methods. For a study of teacher quality and student achievement she triangulated data from 50 U.S. states that included surveys of state policies, case study analyses and



quantitative examinations of state student achievement levels, taking into account student characteristics. Results showed that teacher quality variables were most important in predicting achievement levels.

Similarly Hill and Rowe (1998) point to the importance of the teacher when they suggest that 'it is the identity of the class to which the student belongs that is the key determinant of progress made by the student' (p. 325). Using multi-level modelling techniques they found that when class identity was taken into account, between-school differences fell to between 5 and 8% of the variance in English and Mathematics achievement, while between 36 and 56% of the variance in English and Mathematics was accounted for by class membership (Hill & Rowe, 1996). Hill and Rowe interpret these results as showing that schools do make a difference, but that most of the difference is at the class level. At the class level it is the teacher who has the most control over classroom variables.

Finally, from meta-analyses that encompassed hundreds of thousands of research studies, Hattie and colleagues (Hattie, Clinton, Thompson & Schmidt-Davies, 1995; Hattie, 2003) report that the most salient features related to student learning in school are those controlled by the teacher. In terms of solutions to perceived school 'problems' Hattie concludes:

The answer...lies in the person who gently closes the classroom door and performs the teaching act - the person who puts into place the end effects of so many policies, who interprets the policies, and who is alone with students during their 15,000 hours of schooling (Hattie, 2003, pp. 2-3).

#### **Characteristics of effective teachers**

Research in the area of what makes an effective teacher has a long history, although a variety of terms has been used to describe the characteristics of teachers who make real differences to student academic and cognitive outcomes. In the 1960s, 1970s and 1980s a body of research concentrated on the quality of instruction in classrooms (Carroll, 1963, cited in Bloom, 1976; Bloom, 1976). Bloom refers to quality of instruction as involving management of learning and learners and claims that 'it is the teaching not the teacher that is central, and it is the environment for learning in the classroom...that is important for school learning' (1976, p. 111). He further claims, on the basis of research findings, that quality of instruction consists of cues to the learner, participation in the learning activity, reinforcement, feedback and correctives. Despite Bloom's de-emphasising of the role of the teacher, it is clear that it is the teacher who creates and manages the learning environment in terms of providing the cues, reinforcement and feedback, in addition to ensuring participation of the learners.

A large research synthesis by Brophy and Good (1986) identified a number of 'teacher behaviours that maximise student achievement' (p. 360). The authors caution that the identification of these behaviours may be limited by grade level, student characteristics or learning objectives which indicates that:

Effective instruction involves selecting (from a larger repertoire) and orchestrating those teaching behaviours that are appropriate to the context and to the teacher's goals, rather than mastering and consistently applying a few 'generic' teaching skills' (p. 360).

Brophy and Good classify effective teacher behaviours into seven groups, namely quantity and pacing of instruction, groupings and individualized instruction, giving information, questioning students, reacting to student responses, handling assignments and context specific findings. Within these groupings some factors seem to be particularly important. In terms of instruction, effective teachers actively teach, provide opportunities for learning, hold high expectations for achievement, ensure engaged time and student success, and use diagnostic teaching. In providing information the effective teacher is enthusiastic and presents it with clarity and appropriate pacing, structure,

sequence and degree of redundancy. Effective questioning techniques include appropriate levels of difficulty and wait time and ensuring clarity of questioning and participation by students. Effective reactions to student responses include acceptance of correct responses, follow up of partially correct responses, negation of incorrect responses and use of student responses in making teaching points. Effective teachers set assignments that are varied, motivating, meaningful, challenging, at an appropriate level and, in the early years of school, provide instruction in classroom routines and procedures. Brophy and Good found little definitive research evidence in the area of groupings and individualised instruction.

More recently, Hattie and colleagues (Hattie, 2003), on the basis of a review of the literature and a synthesis of over 500,000 studies identified five major dimensions of 'expert' teachers that it is claimed can distinguish them from other 'experienced' teachers. Sixteen attributes of expertise, which are outlined in Table 2.3, are subsumed under these five dimensions.

Table 2.3 Attributes of teacher expertise (Hattie, 2003)

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<i>Identify essential representations of subject</i>	
•	Deep representations about teaching and learning, resulting in ability to concentrate on instructional significance and adapt lessons to student needs
•	Problem solving approach to their work, focusing on individual students' performance and a flexible approach to teaching
•	Anticipating, planning and improvising, seeking and using feedback
•	Decision making, skill in keeping lesson on track but also building on student input
<i>Guide learning through classroom interactions</i>	
•	Optimal classroom climate – increased probability of feedback, error welcomed and engagement the norm
•	Multidimensional perspectives on classroom situations – effective classroom scanning
•	Sensitivity to context – knowledge of students
<i>Monitor learning and provide feedback</i>	
•	Feedback and monitoring learning
•	Testing hypotheses about learning difficulties
•	Automaticity of classroom skills – ability to deal with situational complexity
<i>Attend to affective attributes</i>	
•	Respect for students – ability to overcome barriers to learning
•	Passion for teaching and learning
<i>Influence student outcomes</i>	
•	Motivation and engagement of students in learning
•	Challenging tasks and goals
•	Positive influence on student achievement
•	Enhancement of surface and deep learning

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Hattie explains that whilst content knowledge is of vital importance it does not appear in the attributes as a key distinguishing feature, since it is necessary for both experienced and expert teachers. He also explains that the distinguishing features are seen as overlapping facets of the whole profile so that no one feature by itself is necessary.

This profile informed a study that aimed to examine teacher expertise in terms of differences between teachers certified by the US National Board for Professional Teaching Standards (NBPTS) and experienced teachers who were not given certification by the board (Bond, Smith, Baker & Hattie, 2000). The certified teachers were found to be more effective in that they differed significantly from the non-certified teachers in the outcomes produced by their students, although, as the researchers point out, entering student ability was not assessed. The two groups of teachers also differed significantly on most of the teacher attributes. Together, the sixteen attributes identified 84% of the

teachers correctly. Thus, it can be seen that the 'expert' teachers were effective in terms of producing improved outcomes for their students and that the profile reliably differentiated effective teachers from other experienced teachers.

Another sophisticated study that was conducted for the U.K. Department for Education and Employment by Hay McBer (DfEE, 2000), identified three factors that predicted over 30% of the variance in student achievement: teaching skills, professional characteristics and classroom climate. Teaching skills or 'micro-behaviours' are defined as high expectations (challenge at an individual level), planning, variety of teaching strategies that ensure engagement, pupil management, time and resource management, assessment, homework, time on task and lesson flow. Professional characteristics overlap with teaching skills, but also include more personal characteristics such as drive for improvement, passion for learning, and flexibility. The classroom climate created by effective teachers is characterised by clarity of purpose, order, clear standards, fairness, participation, support, safety, interest and a positive environment.

This research was undertaken in a 'representative sample' of U.K. primary and secondary schools, using the difference between beginning and end of year assessment of students as the outcome variables, along with a range of 'complementary data-collection techniques'. The researchers conclude that their research 'confirms much of what is already known about teacher effectiveness' and 'adds some new dimensions that demonstrate the extent to which effective teachers make a difference for their pupils' (Key Findings 1.1.1). In this study it is claimed that:

Outstanding [the most effective] teachers create an excellent classroom climate and achieve superior pupil progress largely by displaying more professional characteristics at higher levels of sophistication within a very structured learning environment (DfEE, 2000, Key Findings 1.1.9).

Scheerens and Bosker (1997) also undertook a large analysis of effectiveness research. Whilst their main focus was school effectiveness, several important factors relating to classroom climate, not specifically identified in the literature so far were outlined. Under the classifications of good relationships and satisfaction these include 'the classroom fun factor' (p. 124) or pleasure, warmth towards pupils and empathy or rapport with students. Under the classification of orderliness several factors relate to teacher credibility in terms of clarity of rules and firm but friendly control.

Within the Australian context the Productive Pedagogies framework (Education Queensland, 2002) has been used to examine classroom practices (Lingard *et al.*, 2001) in terms of 20 dimensions that have associated focus questions to guide scoring (see Table 2.4). It is being promoted as a tool for teachers to enable them 'to reflect critically on their work' (Education Queensland, 2002, Introduction). Whilst this framework focuses on students, the dimensions are in effect proxy measures of teacher behaviour in that they are potentially under the control of the teacher.

Table 2.4 Productive Pedagogies dimensions and guiding questions (Education Queensland, 2002)

<b>Dimension</b>	<b>Guiding question</b>
Higher order thinking	Are students using higher-order thinking operations within a critical framework?
Deep knowledge	Does the lesson cover operational fields in any depth, detail or level of specificity?
Deep understanding	Do the work and responses of the students demonstrate a deep understanding of concepts or ideas?
Substantive conversation	Does classroom talk lead to sustained conversational dialogue between students, and between teacher and students, to create or negotiate understanding of subject matter?
Knowledge as problematic	Are students critically examining texts, ideas and knowledge?
Metalanguage	Are aspects of language, grammar and technical vocabulary being given prominence?
Student direction	Do students determine specific activities or outcomes of the lesson?
Social support	Is the classroom characterised by an atmosphere of mutual respect and support between teacher and students, and among students?
Academic engagement	Are students engaged and on task during the lesson?
Explicit quality performance criteria	Are the criteria for judging the range of student performance made explicit?
Self-regulation	Is the direction of student behaviour implicit and self-regulatory?
Cultural knowledge	Are non-dominant cultures valued?
Inclusivity	Are deliberate attempts made to ensure that students from diverse backgrounds are actively engaged in learning?
Narrative	Is the style of teaching principally narrative or is it expository?
Group identity	Does the teaching build a sense of community and identity?
Active citizenship	Are attempts made to encourage active citizenship within the classroom?
Knowledge integration	Does the lesson integrate a range of subject areas?
Background knowledge	Are links with students' background knowledge made explicit?
Connectedness to the world	Is the lesson, activity or task connected to competencies or concerns beyond the classroom?
Problem-based curriculum	Is there a focus on identifying and solving intellectual and/or real-world problems?

In contrast to many of the teacher behaviours identified in the effective teacher research, the Productive Pedagogy dimensions have an emphasis on the active construction of higher order knowledge by students, the problematisation of knowledge, the inclusion of non-dominant groups and the world beyond the classroom (Luke, 2003).

An offshoot of the effective teacher research has been a growing interest in professional standards for teachers that can be used for accreditation purposes by employers and professional organisations. Research into the effectiveness and expertise of teachers has been used to inform these standards (see ACE, 2002; Ingvarsen, 1998; IRA, 2001; OECD, 1994; STELLA, n.d.). These standards are based on the type of research presented above and are not therefore discussed further.

### **Teacher effectiveness research: Conclusions**

The literature on teacher effectiveness has examined teacher behaviour and classroom practice in terms of their effects upon student academic outcomes. Research methodology has been largely reductionist in nature, although the Productive Pedagogies framework takes a broader perspective. From this research a clear picture of effective practitioners and their classrooms emerges. Effective practitioners have a variety of positive characteristics, such as passion for their work, a drive to improve and fairness. Classrooms are characterised by a high level of participation as students are motivated and engaged in learning and, particularly in early years classrooms, routines are consistently established. There is also a clear sense of purpose in terms of subject knowledge that is meaningful and addresses deep and significant learning with clear explanations of concepts and skills.

Effective teachers are automatic managers of students, time and resources, who constantly scan the classroom so that they have a high level of awareness or 'with-it-ness', they pace instruction appropriately, use time productively making use of the smallest windows of opportunity, provide a structured, orderly and safe classroom where parameters are clearly defined, yet are able to flexibly take advantage of learning opportunities as they arise. Effective teachers also provide a high level of support for their students in that they build on student contributions, provide a high degree of redundancy that allows for students to have many opportunities for practice, give feedback that is clearly focused on student responses and use diagnostic teaching practices that are based on analysis of student assessment data. In terms of differentiation for individual students effective teachers adapt instruction for individual differences and provide a high level of challenge that is targeted to individual needs. Finally, effective teachers are credible and fair, establish rapport and mutual respect with their students and generally create a positive, safe and warm classroom climate.

The Productive Pedagogies framework introduces a much broader range of classroom characteristics, some of which have been previously identified. Many of these focus on depth and integration of knowledge and its problematic nature in addition to the ways in which knowledge is constructed, such as through the use of metalanguage and narrative. There is also a very strong emphasis on the inclusion of non-dominant groups, and connections between student background knowledge, community knowledge and class knowledge. Other dimensions of classroom climate that relate to a sociocultural view of learning are active citizenship and student self-regulation that leads to independence in learning.

### **Key attributes of effective teachers**

From the research into teacher effectiveness various attributes of effective teachers have been identified that relate to their personal qualities, the classroom climate they create and their behaviours in the classroom:

### Personal qualities

- Passion for their work
- Drive to improve
- Fairness and credibility
- Respect for students and ability to easily establish rapport with them

### Classroom climate

- Positive, safe and warm
- High level of participation
- Motivation and engagement in learning
- Established classroom routines
- Structured, safe and orderly
- Sense of purpose
- Active citizenship
- Student self-regulation, leading to independence in learning
- Pleasure

### Behaviours

- Efficiently manage students, resources and time (using the smallest windows of opportunity productively) with awareness of the many competing demands of the classroom
- Provide a high degree of support for students
- Give clear explanations of concepts and skills
- Are flexible in seizing learning opportunities and building on student contributions
- Provide for deep and significant learning that may be problematised
- Provide many opportunities for practice of taught material and a high degree of redundancy
- Provide focused and timely feedback
- Pace teaching appropriately
- Use diagnostic teaching based on analysis of student assessment data
- Differentiate instruction for individual needs, including challenging all students at their individual levels
- Use metalanguage and narrative
- Include students from non-dominant groups and make connections between students' different knowledge sources

### **Teacher effectiveness and the teaching of early literacy**

In the discussion of teacher effectiveness thus far, little account has been taken of the fact that effective early years literacy teachers bring about positive outcomes for young children in the specific area of literacy. In many research studies of attributes of effective teachers, the age range of the students taught has not been taken into account. For example in the study by Hattie and colleagues (Hattie, 2003) the teachers identified as expert on the basis of NBTPS certification were teaching across grade levels K-12. Those in the Hay McBer study (DfEE, 2000) were teaching across similar age ranges. Further, whilst teachers have often been identified as effective on the basis of improved student academic outcomes, the content area of these outcomes has varied.<sup>3</sup> The focus of this chapter therefore now turns to the third body of research literature examined, namely the specific area of effective teachers of literacy with particular emphasis on effective teachers of early literacy.

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<sup>3</sup> It is noted that a sizeable proportion of the school and teacher effectiveness research addressing effectiveness in terms of student achievement has included literacy as an outcome variable (for example, Bond, Smith, Baker & Hattie, 2000; Brophy & Good, 1986; Hill & Rowe, 1998; Tymms, 1999).

General research syntheses have indicated that student-related variables account for about 50% of the variance in achievement (Hattie, 2003). However, results of meta-analysis (La Paro & Pianta, 2000) show that around 25% of the variance in early school academic/cognitive performance is accounted for by preschool or kindergarten academic or cognitive variables, and that only around 10% of the variance in social/behavioural measures in kindergarten, first and second grade is accounted for by these variables measured in preschool or kindergarten. Accordingly, since much early academic, cognitive and behavioural progress does not appear to be determined by pre-existing child factors, it seems that teacher practice during the early school years has the potential to make large contributions to literacy outcomes for students.

Underpinning this literature review has been the vital importance of the role of the teacher in early years literacy teaching. It is the teacher who delivers the literacy program within the context of the school community. It has been shown that both the National Reading Panel (2000) and Snow *et al.* (1998) identified specific features of effective classroom practice for early literacy learning. Snow *et al.* claim that research findings converge to show that quality classroom instruction in the early years of school is the 'single best weapon against reading failure' (p. 343). Further, they declare that the skills of good teachers are extremely complex, 'Effective teachers are able to craft a special mix of instructional ingredients for every child they work with' (pp. 2-3). They identified, from previous research, some characteristics of effective teachers of early literacy (see Table 2.5). These findings address both general classroom and early intervention literacy practice.

Table 2.5 Some characteristics of effective early literacy teachers (Snow *et al.*, 1998)

General classroom practice	Effective early intervention practice
<ul style="list-style-type: none"> <li>• Strong knowledge base</li> <li>• Planning instruction to meet diverse needs</li> <li>• Creating a 'literate environment' with access to a variety of reading and writing materials</li> <li>• Providing explicit instruction in reading and writing in 'authentic' and 'isolated' practice</li> <li>• Creating multiple opportunities for sustained reading practice</li> <li>• Choosing a variety of texts at children's instructional level, especially children's literature, including Big Books</li> <li>• Providing activities that link reading and writing</li> <li>• Adjusting groupings and explicitness of instruction according to individual needs</li> <li>• Encouraging self-regulation through meta-cognitive strategies</li> <li>• 'Masterful' management of the classroom</li> </ul>	<ul style="list-style-type: none"> <li>• Strong knowledge base</li> <li>• Planning a daily program for much of the school year</li> <li>• Allocating additional time in reading (not sufficient by itself)</li> <li>• Providing a variety of activities, including reading and rereading of continuous text, writing, word study and decoding strategies</li> <li>• Carefully choosing materials to include engaging texts</li> <li>• Integrating assessment into the program</li> <li>• Engaging in professional development</li> </ul>

This emphasis on effective early years literacy teaching for all children has been taken up by other researchers. Based on research literature, Strickland (2001) describes a number of 'at risk' factors in young children's literacy learning, one of which is 'ineffective classroom practices' (p. 325). Ineffective practices under the control of the teacher include less evidence in the following areas: student time on task, presentation of

new material, high expectations for students, and positive reinforcement, and more evidence of classroom management problems, classroom interruptions and less friendly classroom climate. Strickland claims that for some students from diverse backgrounds such negative classroom practices interact with other factors outside the control of the teacher, such as low socio-economic status and limited proficiency in English, to particularly disadvantage these children. Strickland argues for high quality preventative and intervention programs, distinct features of which have already been identified.

A study commissioned by the UK government Teacher Training Agency (Wray, Medwell, Fox, & Poulson, 2000; Wray, Medwell, Poulson & Fox, 2002) built on the existing body of research into teacher effectiveness in order to examine the characteristics of effective primary school literacy teachers. A group of these teachers was identified as effective on the basis of above-average learning gains in reading for the children in their classes. In addition to this group of 'effective' teachers a validation sample of teachers not so identified also took part in the study. Questionnaires were sent to 228 'effective' and 71 'validation' teachers, and 26 'effective' and ten validation teachers were observed in their classrooms on two occasions and interviewed. Results (see Table 2.6) suggest that the practices of effective teachers differed from those of validation teachers in particular ways.

Table 2.6 Differences of practice between effective and validation literacy teachers (Wray *et al.*, 2002)

- 
- Reading practices - more use of Big Books, use of other adults, short regular teaching sessions
  - Embedding of teaching of reading in a wider context – using whole texts as the basis for teaching skills and having a clear purpose for this
  - Making explicit connections between levels of text
  - Brisk pace – refocusing of attention onto task and reviewing learning
  - Modelling and demonstrations accompanied by verbal explanations of metacognitive processes
  - Differentiation of tasks and support for individuals and groups
  - Heavy emphasis on literacy and use of the literacy environment
  - Clear assessment procedures informing choice of literacy content appropriate for student needs.
- 

A study in the U.S. by Taylor, Pearson, Clark and Walpole (1999) specifically addressed both school and teacher effectiveness in terms of early literacy acquisition (K-grade 3). Using a wide range of quantitative and qualitative data sources, they examined programs and practices in 14 schools containing educationally disadvantaged students, all but three of which had been nominated as producing better than expected reading achievement results. The schools were located in four states of the U.S. and a stratified sample of students from each classroom was administered beginning and end of year literacy assessments. Statistically significant school factors were found to include strong home-school links, systematic assessment of student progress, strong communication and a collaborative model for the delivery of reading instruction that included early intervention. Statistically significant teacher factors included time spent in small group instruction, time spent in independent reading, high student engagement, and strong home communication. Further, the most effective teachers were frequently observed teaching word recognition by scaffolding children when reading aloud, as well as by providing explicit phonics instruction. Effective teachers in effective schools were frequently observed asking higher order questions and in all the most effective schools reading was seen as a priority.

In Australia the Victorian Early Years Literacy Project was based on research into both school and teacher effectiveness as well as literacy acquisition, and in trial schools



significant gains in literacy were made by students. Hill and Crevola (1999) suggest that the most significant features of the program in terms of promoting change and development are the uninterrupted two-hour literacy block, the setting of rigorous targets, a focus on data-driven instruction involving beginning and end of year assessments, the integration of Reading Recovery into the program, the appointment of an early years literacy coordinator and intensive professional development. Home/school/community partnerships were also part of the project design (see also Hill & Jane, 2001).

Rowe and Rowe (1999) included data from the Early Years Literacy Project in a large study that examined models of the relationship between student attentive-inattentive behaviour in the classroom and achievement. Building on work into inattentive behaviour (for example Hinshaw, 1994) they point out that this behaviour, particularly by boys in the early years of school, is associated not only with poor attainment in literacy for these children, but also with diminution of educational opportunities for their classmates. Results of the study indicated a relationship between inattentiveness in the classroom and literacy achievement that was 'reciprocal and mediated by the dynamic inter-dependent effects of prior and concurrent inattentive behaviours and literacy achievement, as well as being subject to background and contextual influences—both at the student level and at the class/teacher level' (Rowe & Rowe, 1999, p. 49).

In other words, results showed that, whilst relationships were complex, it was the class and teacher to which children were assigned that was an important determinant of both attention and literacy, regardless of family background. As such it seems that teachers, who are able to use 'strategic, structured approaches to the teaching of early literacy that meet individual needs' (p. 76) and thus exercise more control over inattentive behaviours, would be more effective teachers of literacy.

A recent study that has analysed the research on effective teaching practices is that by Mazzoli and Gambrell (2003). They identified ten research-based best practices for effective literacy instruction with 'the notion of teacher as instructional designer in mind' (p. 13) that 'provide children with the skill and the will they need to become proficient and motivated literacy learners' (see Table 2.7).

Table 2.7 Research-Based Best Practices for Literacy Teaching (Mazzoli & Gambrell, 2003)

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<ul style="list-style-type: none"><li>• Teach reading for a variety of purposes</li><li>• Use quality literature</li><li>• Integrate word level elements into the total literacy program</li><li>• Use multiple texts</li><li>• Balance teacher and student inputs</li><li>• Build class community and background knowledge</li><li>• Work with students in small groups</li><li>• Give plenty of time to read in class</li><li>• Balance direct and guided instruction and independent learning</li><li>• Use a variety of instructional techniques</li><li>• Use knowledge of linguistic concepts implicitly in their teaching</li></ul>
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Mazzoli and Gambrell also articulate eight principles of best practice that are grounded in constructivist learning theory and which they believe represent 'common ground' in that they will be accepted by researchers and practitioners who hold a variety of theoretical perspectives. These principles are summarised in Table 2.8.

Mazzoli and Gambrell also emphasise that it is the teacher who crafts the classroom literacy program and that effective teachers perform a complex juggling act as they

control the balance of content and emphasis, as well as making adjustments for the changing needs of individual students, as they guide, model, support and introduce them to worthwhile texts.

Table 2.8 Principles of best practice for literacy teaching (Mazzoli & Gambrell, 2003)

- 
- Learning is meaning making
  - Prior knowledge guides learning of individual students
  - Scaffolded instruction facilitates learning, with supports gradually removed
  - Social collaboration enhances learning
  - Learners learn best when they are motivated, interested and involved
  - The goal is to develop high-level, strategic readers and writers
  - Instruction is balanced
  - Practice is based on informed decision making
- 

### **Research on effective teachers of literacy/early literacy: Conclusions**

Findings from the research literature on the effective teaching of literacy, in particular the effective teaching of early literacy, have much in common with the effective teaching literature. Some additional teacher characteristics have been identified from this body of research.

#### **Additional key attributes of effective teachers of early literacy**

- Strong literacy knowledge base that informs teaching
- Creation and use of a literate environment
- Scaffolding literacy learning through a variety of techniques
- Varying the use of groupings for literacy instruction to suit class and individual needs
- Ensuring children's attention is focused on literacy tasks.

### **Discussion**

The focus of this chapter has been effective literacy teaching and learning practices in the early years of school. As reading is the component of literacy that internationally has had the most attention in the research literature there has been some focus on this and a relative neglect of writing. A search of the ERIC database using the keywords 'young children' and 'writing' identified only 32 citations, many of which were descriptions of children's early writing development (for example, Newkirk, 1987). Where there was assessment of children's writing progress it was usually within the context of other variables, such as self-regulated learning (Perry & VandenKamp, 2000). Additionally, in the study by Wray and colleagues (2002), whilst the practices of effective teachers could be distinguished from those of validation teachers in many areas, in the area of teaching writing, differences between the two groups of teachers were not so clear. Thus, the omission of effective practices specifically for the teaching of writing reflects the lack of definitive research in the area.

In order to identify effective literacy teaching and learning practices, literature from a number of political and geographical English-speaking contexts has been examined. The research studies accessed have represented various research paradigms, both quantitative and qualitative. In order to allow for findings that are backed up by converging evidence, studies in which large meta-analyses have been conducted have been given some prominence. Nevertheless, in order to present as broad a picture as possible, some attention has also been given to targeted individual studies. Additionally, the literature from a number of educational research areas has been accessed in order to help identify effective practice.

The literature has included government commissioned projects into effective literacy practice in general and effective early years literacy practice in particular. There has also been some cognisance of literature relating to students who may be seen as 'at risk' during early literacy learning, and strategies that have the potential to decrease their risk of developing learning difficulties. Finally studies have been examined that have specifically related the literature on effective teaching to the effective teaching of literacy, including effective teaching of early literacy.

It has been shown that literacy is taught, learnt and researched in a variety of contexts. Within these contexts there are different definitions of literacy (in some it is limited to the reading strand) and various research methodologies have been used to study its acquisition and teaching. In addition, within the English speaking contexts from which the research reviewed here has originated, there is a large amount of government interest in the topic and of government commissioned research. Whilst it is acknowledged that research commissioned by government agencies has enabled significant advances in knowledge in the area, two observations need to be made.

Firstly, within the Australian context, government commissioned school-based literacy research has included a range of research methodologies, with a strong emphasis on qualitative research. Within the United States, the research report *Preventing Reading Difficulties in Young Children* (Snow *et al.*, 1998) had an emphasis on experimental research but also examined research from other perspectives. On the other hand, the National Reading Panel (NRP, 2000) examined only experimental research, used meta-analysis as the main form of data analysis and included a very limited number of reading-related factors. It seems that, if a comprehensive picture of literacy learning and teaching within a particular context is to be found, research from a variety of perspectives that includes a range of factors, is essential.

Secondly, within the context of educational benchmarking and target setting there is a tendency by some governments to focus teaching and research agendas on learners 'at risk' of educational failure. In terms of equity of access to educational outcomes for these students this is an admirable focus. Yet, as Luke (2003) has pointed out, too strong a focus on ensuring that all children reach benchmarks may result in a narrowing and 'dumbing down' of the curriculum that results in a lack of challenge for many students, particularly the most able. In the Programme for International Student Assessment (PISA) survey of upper secondary students' reading skills (Lokan, Greenwood, & Cresswell, 2001) it was found that the reading proficiency of the most able Australian students was extremely high, with 18% of students achieving the highest proficiency level, compared with an OECD average of 10%. In this survey students were required to understand the contexts in which written texts were developed and to use this contextual understanding to interpret and reason about texts (Masters, 2000). It therefore seems important that Australian schools continue to challenge and extend the higher order reading skills of students. At the same time it is also most important that Australian schools find ways of increasing the reading skills of those students at the lowest proficiency levels. Indigenous students, those from low SES backgrounds and boys were over-represented at the lowest proficiency levels in the PISA survey.

In the research areas investigated for this study there are some converging findings from a variety of contexts and research paradigms. Nevertheless, in identifying what might be effective strategies for teaching and learning literacy in the early years of school in Australia, it is necessary to take into account the Australian context and its relatively small population of children and educational researchers. As Clay (1998) has cautioned:

Science relies on replication of results, so countries with a large research community will provide many confirmations of their [children's] paths to [literacy]

acquisition, and countries with a small volume of research will be hard pressed to demonstrate that the world could be otherwise (p. 90).

### Summary and Conclusions

Based on this review of research literature, characteristics of effective teachers of early literacy can be classified along six broad dimensions, each of which contains subgroups of specific classroom practices. These dimensions and teaching practices have been formulated from research findings concerning the characteristics and content knowledge of effective teachers, in addition to their classroom practices that include the creation of the classroom climate. They form the basis of the Classroom Literacy Observation Schedule (CLOS) that was devised in order to observe literacy classrooms in this study. We have endeavoured to include key findings from a wide range of research studies, but choices have had to be made in view of the study purposes. Findings from various studies have been synthesised to form each dimension and indicator of teaching practice. It will be noted that some dimensions focus largely on teacher behaviours, while others focus more on the behaviours of children. The child behaviours are proxy indicators of teacher effectiveness in that it is the teacher who potentially has control over these child behaviours in the classroom. In the following description the dimensions and associated practices are justified on the basis of examples of the research studies presented in this chapter.

#### Ways in which the teacher organises for and motivates children's *participation* in classroom literacy tasks

- Attention:** Almost all children are focused on literacy learning (Rowe & Rowe, 1999; Wray *et al.*, 2000)
- Engagement:** Children are deeply absorbed in the literacy lesson/task (Brophy & Good, 1986; DfEE, 2000; Hattie, 2003; Taylor *et al.*, 1999)
- Stimulation:** The teacher motivates interest in literacy tasks, concepts and learning (Brophy & Good, 1986; Hattie, 2003; Mazzoli & Gambrell, 2003)
- Pleasure:** The teacher creates an enthusiastic and energetic literacy classroom (Scheerens & Bosker, 1997; Snow *et al.*, 1998)
- Consistency:** Strong literacy routines are recognised and understood by the children (Brophy & Good, 1986; Hill *et al.*, 1998)

#### Ways in which the teacher uses her *knowledge* of literacy to effectively teach significant literacy concepts and skills

- Environment:** Literate physical environment is used as a teaching resource (Hattie, 2003; Snow *et al.*, 1998; Wray *et al.*, 2000)
- Purpose:** Children's responses indicate tacit or explicit understanding of the purpose of the task (Mazzoli & Gambrell, 2003; Wray *et al.*, 2000)
- Substance:** The lesson/task leads to substantial literacy engagement, not busy-work (Education Queensland, 2002; Hattie, 2003)
- Explanations:** Explanations of literacy concepts and skills are clear and at an appropriate level (Brophy & Good, 1986; Hill *et al.*, 1998)
- Modelling:** Demonstrations of reading and writing tasks include metacognitive explanations (Snow *et al.*, 1998; Wray *et al.*, 2000)
- Metalanguage:** Children are provided with language for talking about and exemplifying literacy concepts (Education Queensland, 2002)

#### Ways in which the teacher manages or *orchestrates* the demands of the literacy classroom

- Awareness:** The teacher has a high level of awareness of literacy activities and participation by children (Hattie, 2003; Snow *et al.*, 1998)
- Structure:** The environment is predictable and orderly (DfEE, 2000; Scheerens & Bosker, 1997)

- Flexibility:** The teacher responds to learning opportunities that arise in the flow of literacy lessons (DfEE, 2000; Hattie, 2003)
- Pace:** The teacher provides strong forward momentum in literacy lessons (Brophy & Good, 1986; Wray *et al.*, 2000)
- Transition:** Minimum time is spent in transitions or there is productive use of transitions (Bloom, 1976; DfEE, 2000; Strickland, 2001)

**Ways in which the teacher *supports* children's literacy learning**

- Assessment:** The teacher uses fine-grained knowledge of children's literacy performance in planning and teaching (Hill & Crevola, 1999; Loudon *et al.*, 2000; Wray *et al.*, 2000)
- Scaffolding:** The teacher extends children's literacy learning through modelling, modifying, correcting (Bloom, 1976; Brophy & Good, 1986; Taylor *et al.*, 2000)
- Feedback:** The teacher gives timely, focused and explicit literacy feedback to children (Bloom, 1976, Hattie, 2003; Strickland, 2002)
- Responsiveness:** The teacher shares and builds on children's literacy contributions (Brophy & Good, 1986; Hattie, 2003)
- Explicitness Word level:** The teacher directs children's attention to explicit word and sound strategies (Mazzoli & Gambrell, 2003; NRP, 2000; Snow *et al.*, 1998; Taylor *et al.*, 1999)
- Explicitness Text level:** The teacher makes explicit specific attributes of a text (Mazzoli & Gambrell, 2003; NRP, 2000; Snow *et al.*, 1998)
- Persistence:** The teacher provides many opportunities to practise and master new literacy learning (Brophy & Good, 1986; Snow *et al.*, 1998)

**Ways in which the teacher *differentiates* tasks and instruction for individual learners, providing individual levels of challenge**

- Challenge:** The teacher extends and promotes higher levels of thinking in literacy learning (Brophy & Good, 1986; DfEE, 2000; Education Queensland, 2002; Hattie, 2003)
- Individualisation:** Differentiated literacy instruction recognises individual differences (S. Hill *et al.*, 1998; Snow *et al.*, 1998; Wray *et al.*, 2000)
- Inclusion:** The teacher facilitates inclusion of all students in the literacy lessons (Education Queensland, 2002; Snow *et al.*, 1998)
- Variation:** Literacy teaching is structured around groups or individuals (Mazzoli & Gambrell, 2003; Snow *et al.*, 1998; Taylor *et al.*, 2000)
- Connection:** Connections are made between class and community literacy-related knowledge (Hill *et al.*, 1998; Education Queensland, 2002; Mazzoli & Gambrell, 2003)

**Ways in which the teacher gains the *respect* of the children and in which the children demonstrate respect**

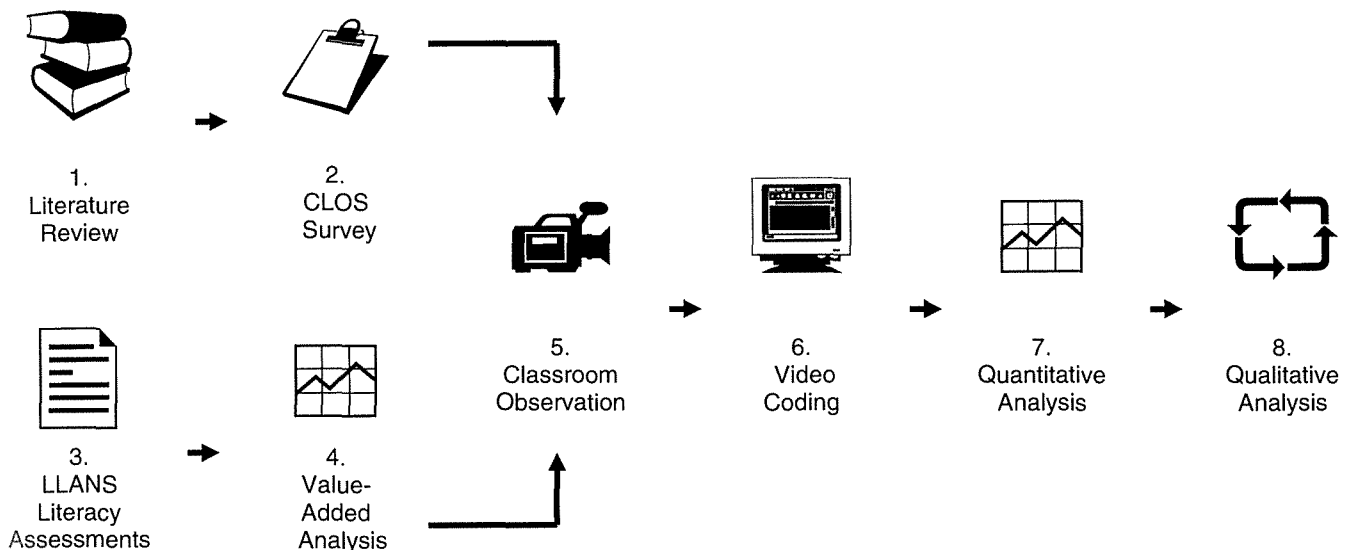
- Warmth:** Welcoming, positive and inviting classroom is focused on literacy learning (Scheerens & Bosker, 1997; Snow *et al.*, 1998)
- Rapport:** Relationships with the children support tactful literacy interventions (Brophy & Good, 1986; DfEE, 2000; Hattie, 2003)
- Credibility:** Respect for the teacher enables her to overcome any challenges to order and lesson flow (DfEE, 2000; Scheerens & Bosker, 1997)
- Citizenship:** Equality, tolerance, inclusivity and awareness of the needs of others are promoted ( Education Queensland, 2002)
- Independence:** Children take some responsibility for their own literacy learning (Education Queensland, 2002; Mazzoli & Gambrell, 2003; Snow *et al.*, 1998)

## Chapter 3: Methodology

### Overview

This study has built an evidential link between children's growth in English literacy in the early years of schooling and their teachers' classroom practices. The approach combined quantitative and qualitative research strategies in eight phases, as illustrated in Figure 3.1 and described briefly below:

Figure 3.1 Phases of the research process



*Review of the literature* on effective teaching, literacy teaching and learning, and effective teaching of early literacy; Based on findings from the literature review, development of the *Classroom Literacy Observation Schedule (CLOS)*, a tool with which to observe early literacy teachers at work in their classrooms;

*Assessment* of a nationally representative sample of children in their first and second years of schooling, using the literacy assessment tasks developed and employed in ACER's *Longitudinal Literacy and Numeracy Study (LLANS)*;

'*Value added*' analyses to identify three groups of teachers; those who were *more effective*, *as effective*, or *less effective* than expected, based on prior achievement-adjusted, mean-point estimates of class/teacher-level residuals of children's *LLANS* assessments;

*Classroom observation*, including videotaped records of literacy teaching in selected classrooms of teachers identified as *more effective*, *effective* and *less effective* and *Video coding* of a representative selection of classroom literacy activities in each observed classroom, coded using the CLOS rating protocol;

*Quantitative analysis* of the video coding data, including frequency of each of the CLOS literacy teaching practices in the observed classrooms, confirmatory factor analysis of the CLOS dimensions, and Rasch analysis to estimate teacher effectiveness in terms of a teacher's *Repertoire of Literacy Teaching Practices*; and

*Qualitative analysis* was made across the video cases through the application of each of the CLOS teaching practices by the *more effective*, *effective* and *less effective* teachers.

### Development of the Classroom Literacy Observation Schedule

The *Classroom Literacy Observation Schedule (CLOS)* was designed to register teaching practices identified in the literature review as contributing to effective early years literacy teaching. The first step in the development of CLOS was to visit the classrooms of several teachers, including a teacher regarded as particularly effective. Video records of several visits were made. With these videotapes and observations as a common anchor for the researchers, the literacy teaching practices identified in the project's literature review were reconsidered. A set of propositions was developed, each of which was thought likely to be rated as observable or not observable in the anchor classroom.

More than a dozen iterations of this list were produced prior to a pilot version of CLOS being trialled in several additional classrooms selected to represent schools in a range of social and cultural circumstances. The final CLOS schedule included two axes: the *teaching activity axis*, and the *teaching practice axis*. The *activity axis* listed 17 common teaching activities, such as 'shared reading' and 'modelled writing'. This list is shown in Table 3.1. The CLOS *teaching practice axis* included 33 Literacy teaching practices (Table 3.2), grouped into six dimensions: *Participation, Knowledge, Orchestration, Support, Differentiation* and *Respect*. Within each of these dimensions, five to seven indicators relate to literacy teaching practices. Chapter 5 provides an empirical justification for the theoretically derived items on the two CLOS axes.

Table 3.1 Classroom Literacy Observation Schedule (Teaching Activity Axis)

<b>Activities</b>
<ul style="list-style-type: none"> <li>• Shared Book</li> <li>• Reading to Children</li> <li>• Guided Oral Reading</li> <li>• Independent Silent Reading</li> <li>• Hearing children read</li> <li>• Modelled writing</li> <li>• Shared writing</li> <li>• Interactive writing</li> <li>• Independent writing</li> <li>• Spelling activities</li> <li>• Language experience</li> <li>• Socio-dramatic play</li> <li>• Literacy related computer activities</li> <li>• Use of commercial literacy programs</li> <li>• Phonics</li> <li>• Organisational Activities: Independent group work</li> <li>• Organisational Activities: Task board discussion</li> </ul>

Table 3.2 Classroom Literacy Observation Schedule (Practice Axis) (Louden &amp; Rohl, 2003)

<b>Participation</b>	Attention	Almost all children are focused on literacy learning
	Engagement	Children are deeply absorbed in the literacy lesson/task
	Stimulation	The teacher motivates interest in literacy tasks, concepts and learning
	Pleasure	The teacher creates an enthusiastic and energetic literacy classroom
	Consistency	Strong literacy routines are recognised and understood by the children
<b>Knowledge</b>	Environment	Literate physical environment is used as a teaching resource
	Purpose	Children's responses indicate tacit or explicit understanding of the purpose of the literacy task
	Substance	The lesson/task leads to substantial literacy engagement, not busy-work
	Explanations	Explanations of literacy concepts and skills are clear and at an appropriate level
	Modelling	Demonstrations of literacy tasks include metacognitive explanations
	Metalanguage	Children are provided with language for talking about and exemplifying literacy concepts
<b>Orchestration</b>	Awareness	The teacher has a high level of awareness of literacy activities and participation by children
	Structure	The environment is predictable and orderly
	Flexibility	The teacher responds to learning opportunities that arise in the flow of literacy lessons
	Pace	The teacher provides strong forward momentum in literacy lessons
	Transition	Minimum time is spent in transitions or there is productive use of transitions
<b>Support</b>	Assessment	The teacher uses fine-grained knowledge of children's literacy performance in planning and teaching
	Scaffolding	The teacher extends children's literacy learning through modelling, modifying, correcting
	Feedback	The teacher gives timely, focused and explicit literacy feedback to children
	Responsiveness	The teacher shares and builds on children's literacy contributions
	Explicitness	Word level – The teacher directs children's attention to explicit word and sound strategies
	Explicitness	Text level - The teacher makes explicit specific attributes of a text
	Persistence	The teacher provides many opportunities to practise and master new literacy learning
<b>Differentiation</b>	Challenge	The teacher extends and promotes higher levels of thinking in literacy learning
	Individualisation	Differentiated literacy instruction recognises individual differences
	Inclusion	The teacher facilitates inclusion of all children in the literacy lessons
	Variation	Literacy teaching is structured around groups or individuals
	Connection	Connections are made between class and community literacy-related knowledge
<b>Respect</b>	Warmth	Welcoming, positive and inviting classroom is focused on literacy learning
	Rapport	Relationships with the children support tactful literacy interventions
	Credibility	Respect for the teacher enables her to overcome any challenges to order and lesson flow
	Citizenship	Equality, tolerance, inclusivity and awareness of the needs of others are promoted
	Independence	Children take some responsibility for their own literacy learning



The CLOS *teaching practice axis* was designed to allow partial credit ratings for each of the six dimensions of 'effective practice'. Raters were required to allocate one score point for each of the teaching practices thought to be present in a particular episode (observational frame). On the schedule for the *Orchestration* dimension, for example, a classroom might have been credited with a score for: pace, transition and structure, but not credited with a score for: awareness, flexibility or persistence. The rationale behind this scoring strategy was that classroom activities typically require 'trade-offs' between, for example, flexibility and pace or structure, since lessons will always provide opportunities to depart productively from planned activities. Nevertheless, it was hypothesized that these departures may be undertaken at a cost to a strong forward momentum, or to the predictability and orderliness of the classroom. The most effective teachers, it was postulated, are those who can achieve a measure of flexibility without a too-obvious 'trade-off' for pace or structure.

Table 3.3 provides an example of a partial credit rating for a classroom scoring 3/5 on *Orchestration*. This illustrative score sheet indicates that the teacher has created a safe and orderly environment, achieves a strong forward momentum in the lesson, and moves quickly from one activity to the next. She does not, however, have a strong awareness of children's levels of participation, and does not make productive departures from her planned lesson.

Table 3.3 Sample score sheet for Orchestration

<b>Orchestration</b>	Awareness	The teacher has a high level of awareness of classroom activities and participation by children	
	Structure	The environment is predictable and orderly	✓
	Flexibility	The teacher responds to learning opportunities that arise in the flow of lessons	
	Pace	The teacher provides strong forward momentum	✓
	Transition	Minimum time spent in transitions or productive use of transitions	✓

**Assessment**

The literacy assessments chosen for this study were based on the initial phases of the *Longitudinal Literacy and Numeracy Study (LLANS)*, conducted by the Australian Council of Educational Research (ACER) between 1998-2000. ACER developed the *LLANS* assessments as part of a national longitudinal study, with the goal of measuring and describing children's developmental growth and achievement progress in literacy and numeracy from their first year of schooling through to the stage when students make the transition to secondary school. The key research questions in this ACER seven-year longitudinal project are: 'What is the nature of literacy and numeracy development amongst Australian school children?'; and, 'How can growth in literacy and numeracy be best described?' For specific details of this initial work and the related developments, see Meiers (1999, 2000); Meiers and Anderson (2001); Meiers and Rowe (2002); Meiers and Stephanou (2000); Rowe (2002).

The *LLANS* assessment instruments have been constructed within the conceptual framework of developmental assessment proposed by Masters and Forster (1997). Central to developmental assessment is the use of progress maps that describe increasing levels of achievement. These progress maps provide frames of reference for monitoring the development of individuals or groups. At different points in time, estimates can be made of a student's location on the progress map, and changes in location provide measures of growth over time (see Masters, Meiers & Rowe, 2003).

### **Development of *LLANS* assessments**

The *LLANS* literacy assessments developed by ACER are considered Australia's benchmark of early literacy assessment procedures. In developing them ACER ensured that the assessment materials were widely applicable and consistent with any existing State and Territory arrangements through collaborative development of the assessment items, trial of the assessments in a nationally representative random sample of 1000 children, and construction of a common scale (or progress map).

Five sets of linked assessment tasks were used to cover the expected range of what children know and can do in literacy and numeracy during the first three years of their formal schooling. The tasks focus on critical aspects of literacy and numeracy, and include many 'hands-on' activities, supported by authentic texts such as high quality children's picture storybooks. The assessments were planned to be undertaken at the beginning and end of the first and second years of school, and in the second term of the third year. Items of varying and increasing difficulty were included in the set of activities for each assessment. Groups of items were repeated from one assessment to the next, providing links forwards and backwards between the five assessments.

Practicality of administration was an important consideration, including the time required to undertake the assessments. They were conducted by the children's own teachers in one-to-one interviews. A marking guide (categorisation of children's responses) was included with the tasks, and teachers made judgments of each child's responses against the marking guide. Precise instructions were provided and teachers were asked to follow these so that the tasks were, as far as possible, administered under standard conditions. The clarity of the administration and scoring instructions was particularly significant in ensuring consistency and the reliability of the data.

The five broad aspects of literacy investigated in each of the sets of common tasks were: phonemic awareness, environmental print concepts, children reading aloud, making meaning from text, and writing.

During 1999 and 2000, ACER trialled the items, the administration and scoring procedures, and estimated the psychometric properties of the *LLANS* progress map. A nationally representative sample of 1000 children drawn from a random national sample of 100 schools formed the original cohort for the *LLANS* project. Ten children were randomly selected from class lists of children entering their first year of school. These lists were provided at the beginning of the 1999 school year by the 100 schools participating in the project, and approvals of the parents of these children for participation were obtained.

### **Development of the *LLANS* scale by ACER**

ACER researchers ensured that data from the *LLANS* project provided a properly calibrated common scale, essential for the measurement of development over time. Student assessment data collected during the trial stage were analysed using Rasch Measurement (Adams & Khoo, 1999; Andrich, 1978; Masters, 1982; Wright & Masters, 1982; Wright & Mok, 2000) which provided a means of displaying the performance of children and the difficulty of tasks on the same interval scale, with a common unit of measurement. The best performances and the most difficult tasks appeared high on the trial scale. The less developed performances and the easiest tasks appeared low on the trial scale. The *LLANS* surveys completed between 1999-2000 contained common items, the response-data from which allowed the calibration of all tasks to be displayed on this common scale.

In the Rasch analysis, the difficulty of a task for which responses were marked either 'correct' or 'incorrect' was represented by the position of its threshold on the scale.

Children above the threshold were more likely to respond correctly to an item, whereas children below were less likely to respond correctly. A similar explanation was given for tasks requiring a partial credit rating (i.e., those rated in more than two categories).

The calibration of the tasks on the scale was followed by an analysis of fit to check the extent to which these tasks targeted the same latent trait. 'Misfits' in Rasch measurement were a source of information on the performance of children. All 'misfitting' items were considered and explanations sought. In examining the results of the fit analyses, some collapsing of the categories in which children's responses had been assigned became necessary – either because insufficient data were available for accurate calibration, or because adjacent categories were not clearly and meaningfully discerned by children. For example, if two categories were too close along the continuum the location of their thresholds would overlap.

The description of the measured variable was a lengthy process in which common features in the categories of items belonging to the same part of the scale were identified. Regions of the scale, partly overlapping, with qualitatively different and meaningful description were formed. The description of these regions constituted the description of the measured variable.

The construction and description of suitable variables for showing the variation in the skills children develop during their early years at school made it possible to show children's typical progress in their development of various skills. Figure 3.2 (below) presents the qualitatively-described *LLANS literacy* scale with the normative distributions (in the form of box-and-whisker plots) for the children in this study and in the comparable studies undertaken by ACER (for example, Meiers & Rowe, 2002).

#### **Administration of *LLANS literacy* assessments in this DEST study**

Following the pattern of the *LLANS* study, a new random national sample of 100 schools was drawn from the ACER sampling frame. The cohort consisted of children in their first and second years of schooling. School systems and school principals were approached for agreement to participate in the study. In each school, ten children were randomly selected from class lists at the beginning of their first year at school, and ten at the beginning of their second year at school. Classes were randomly selected if there was more than one class in any year level. Repeated measures of the children's literacy achievements on a modified<sup>4</sup> version of the *LLANS literacy* instruments were collected during Term 1, 2001 from 948 children in their first year of schooling and 911 children in their second year, and again during Term 4, 2001 from 836 of the first year children and 861 of the second year children.

Teachers in the selected schools conducted these Term 1 and Term 4 assessments. ACER had already established processes for coding the tasks, managing the achievement data and reporting achievement on the scales. Schools were provided with whole cohort, whole school and individual analyses of children's performances at the conclusion of the second round of assessment. In addition, schools were offered reimbursement for teacher relief for four days over the year in order to allow class teachers to administer the assessment tasks and complete a survey instrument.

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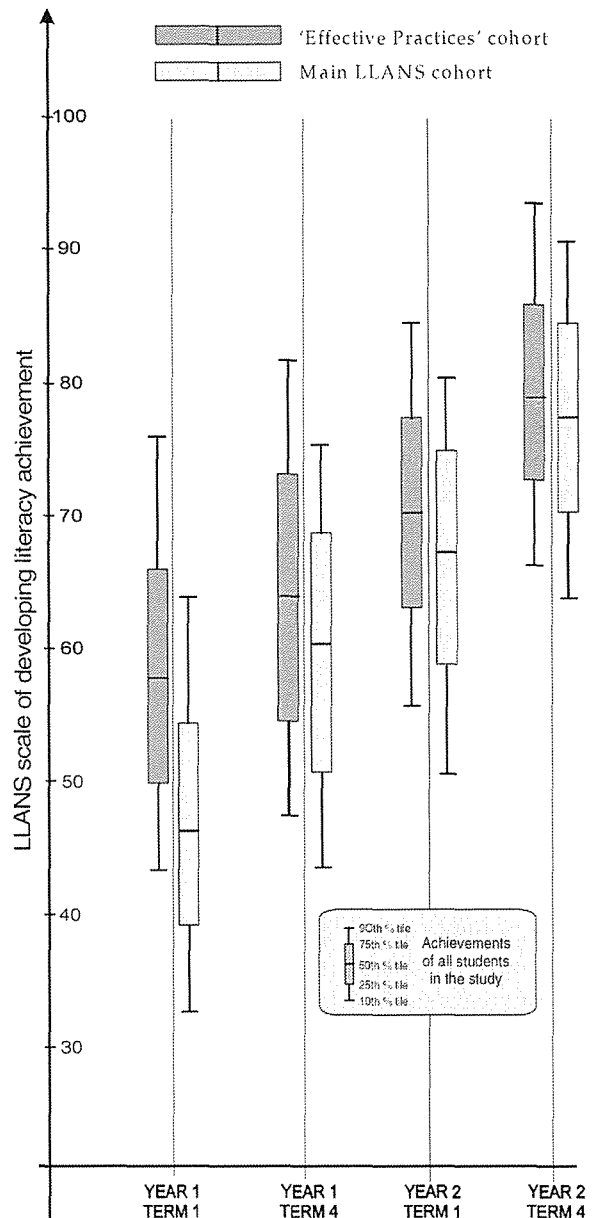
<sup>4</sup> What is meant by 'modified' here refers to all assessment tasks from the two forms that were used for equating the different tasks – for the purposes of constructing and describing the *LLANS literacy* scale relevant to the present study.

## Longitudinal Literacy and Numeracy Study (LLANS)

### LITERACY SCALE DESCRIPTION & NORMATIVE DISTRIBUTIONS

**Note:** The indicators listed on this side of the scale have been derived from the tasks completed in the LLANS assessments. Only a selected sample of these indicators has been used to describe developing achievement in literacy.

- Writes a variety of simple sentences; selects and controls content of own writing. Listens to a text and infers the reason for an event without picture clues.
- Uses full stops and capital letters to separate sentences. Identifies the purpose of parts of a text (eg, glossary, caption).
- Listens then gives a comprehensive summary of a picture story book or reader.
- Reads aloud with word-for-word accuracy an early reader that develops a complete factual account with some support from illustrations. Connects some ideas in own writing.
- Segments or blends four phonetically regular syllables in an unfamiliar word. Manipulates beginning, middle and end sounds in short words to make new words.
- Reads many irregularly spelt words (eg, *would, because*).
- Spells many words correctly in own writing. Listens to a text and connects pictures and text to explain events.
- Reads a short text to locate explicitly stated information. Uses *'and, but'* or *'then'* to join ideas in a sentence. Names and describes the purpose of common punctuation marks.
- Reads aloud with moderate accuracy an early reader that portrays a predictable event with extensive repetition of phrases.
- Explains explicitly stated ideas in short narrative and factual texts. Lists simple ideas in own writing.
- Generates a word that rhymes with a given word.
- Uses simple sentences in own writing. Writing includes many unconventional spellings that are phonetically plausible. Listens, then gives a relevant detail from a narrative or factual text.
- Matches the same first sound or the same rhyme in 2 of 3 words in any order. Reads some common words (eg, *do, little, are, from, one*). Identifies beginning, middle and end sounds in regular one-syllable words. Predicts a story from the cover of a book. Names and describes the purpose of a full stop.
- Writes some recognisable words. Reads a few common words (eg, *you, my, and, the, is*). Sounds and names at least 10 alphabet letters.
- Indicates correct direction for reading.
- Writes own name correctly.
- Uses clues from pictures to connect events.
- Distinguishes a letter from a word.
- Expresses own meaning using unconventional writing.
- Locates the front of a picture story book. Identifies a word.



Australian Council for Educational Research

Figure 3.2 Described LLANS literacy scale, showing normative distributions for two cohorts of children

### Value added analysis

Subsequently, 'value-added' analyses were undertaken (Fitz-Gibbon, 1996; Tymms, 1999), comparing the mean growth over a school year in LLANS literacy scores for each group of ten children. The 'value-added' techniques included a multilevel analysis using MLwiN software (Rasbash *et al.*, 2001), with the goal of accounting for the impact of home language and culture on 'value-added' residuals. The analytic strategy and the results of this analysis are described in greater detail in Chapter 4.

In order to link estimates of growth in student achievement with teachers' pedagogical behaviours in each of the class groups, a schedule of school visits was arranged. The teachers approached to participate in the classroom observation phase of the study were selected on the basis that the mean standardised residual for their group of ten children assessed in the previous year was significantly more than expected, as expected, or less than expected. For ease of reporting, the teachers associated with each classroom data set are referred to in this report as 'more effective', 'effective' and 'less effective'. It should be noted that effectiveness is defined here solely in terms of the residual scores of the sample of ten children in each teacher's class using the *LLANS literacy* assessments. The aim of the classroom observation phase was to gather evidence on the teaching practices used by teachers within classrooms in which children had achieved at higher than expected, as expected and lower than expected levels on the *LLANS literacy* assessments.

Within each category of effectiveness, teachers were selectively approached to participate in this phase of the study in order to secure a balance not only of teacher effectiveness, but also of school geographical location, school size and the socio-economic, ethnic and linguistic background of children. In order to ensure that teachers in the effective group could clearly be seen to be effective, only those teachers whose students' learning gain adjusted residual in standard deviation units was positive, that is they were ranked above the median of the group, were approached<sup>5</sup>. Not all teachers approached were willing to participate in this phase of the research project and some teachers were no longer teaching in the same school or were teaching in another year level. It is noted that none of the classrooms of the teachers who agreed to take part in the observation phase of the study contained a majority of high SES background children. Additionally, several of the effective teachers' classrooms contained significant proportions of children who spoke English as an Additional Language (EAL). All of the less effective teachers' classrooms contained a majority of low SES background children as did several of the classrooms of the effective teachers. Details of each of the classrooms in the observation phase of the study are provided in the Introduction to Chapters 6-11: The Cross-Case Analysis.

Ten schools in four States were visited for this phase of the study. In eight of these schools, only one teacher was observed. In one school, two teachers were visited but limited access to one meant that only the second year of school achievement data were included. In two schools several teachers had been involved in generating the student assessment data collected the previous year when the children had been in Multi-Aged-Group classes. In one of these schools only one class was still in a Multi-Aged-Group situation and, as this class contained predominantly first year of school children at the time of observation, only the achievement data for children in their first year of school were included. The other school was still working in a Multi-Aged-Group situation at the time of observation and the two teachers observed had classes with similar numbers of first and second years of school children. In this school, the achievement data for children in both first and second year of school were included. Although 99 schools participated in the initial *LLANS literacy* assessments, missing data reduced the number of class groups to 89 for the first year of school and to 89 groups for the second year of school who returned valid data.

The final sample of teachers who were observed in their classrooms was made up of two more effective teachers, four effective teachers and four less effective teachers. Seven of

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<sup>5</sup> The teachers at one school approached and included in the *effective* teacher group team-taught a class that contained children from the first three years of school. These teachers were ranked above the mean for their first year of school children and marginally below the mean for the second. Their data for the observation phase of the study were combined to form one case.

the teachers' classrooms contained first year of school children (one of these also contained a few second year children), two contained second year of school children and one contained children from the first three years of school.

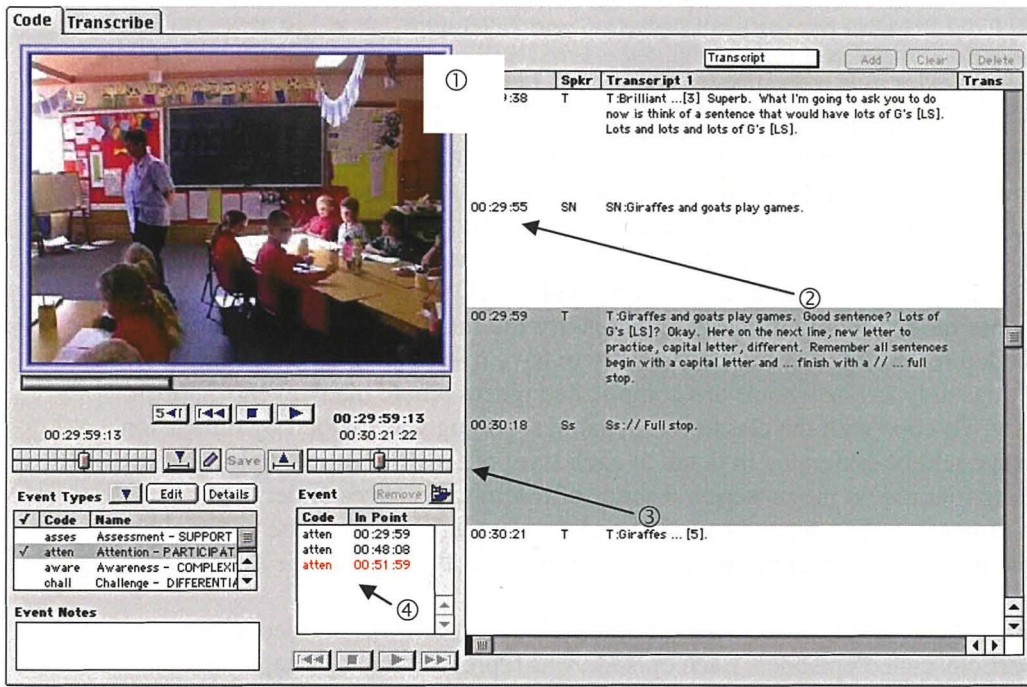
### Classroom Observation

The classroom observation phase of the study involved non-participant observation in the classrooms of each of the ten teachers identified by their students' mean learning gain residuals. Pseudonyms were used for teachers' and children's names to provide anonymity throughout this report. A two-person research team spent two to four days in each class, recording and observing the literacy teaching and learning in the class. Each research team included one of the senior researchers in the project and a research associate responsible for technical aspects of video and audio recording. Five kinds of records were produced through this program of observation:

1. A running schedule of activities in the classroom, divided into episodes;
2. *In situ* provisional scoring of each of these episodes, registering the apparent presence or absence in each episode of the teaching practices and activity types defined by CLOS;
3. Digital audio recordings of each teachers' classroom talk, which was later transcribed;
4. Digital video recording, using one camera to focus close-up on the teachers' activities and one camera to maintain a wide-shot overview of children's activities; and
5. Digital audio or video recording of an interview with each teacher, focusing on their professional experience and their reactions to viewing a selection of the videotaped record of their teaching.

### Analyses of video data using vPrism

Subsequently, each team of researchers selected a total of two hours of teaching regarded as most representative of their period of observation in each class. This set of two-hour video samples and their corresponding transcriptions were linked and entered into the vPrism 3.056 research software (see: [www.lessonlab.com/vprism/](http://www.lessonlab.com/vprism/)).



Notes to Figure 3.3:

- ① Digital video display
- ② Transcriptions and annotations linked to the video by timecodes
- ③ When text is highlighted, video moves to the corresponding point
- ④ Event codes used to retrieve segments of the video for statistical analysis

Figure 3.3 vPrism sample screen

Figure 3.3 provides a vPrism sample screen. The vPrism software was selected because it allowed researchers to link the video footage to the associated transcripts using time-codes and then to identify portions of the annotated video that reflected the CLOS scoring they had completed *in situ*. In addition, the *in situ* CLOS analysis could be refined and justified by the out-of-class analysis that followed the period of classroom observation.

**Preparation of video and audio data**

The digital video footage was compressed into practical file size using the MPEG-1 encoding format. Lessons from each camera were stored on recordable CD-ROMs. Multiple copies were made for each member of the research team and for back-up purposes. The digital audio recordings of classroom talk were transcribed using generic transcribing software, with a simple transcript convention agreed upon by the researchers (see Table 3.4). Each video and transcript file was logged into the vPrism database, and transcripts were imported as tab-delimited text files.

Table 3.4 Transcript conventions

O	Observer
SN	New student speaks
S	Student
S?	Unknown student
Ss	Students
E	Teacher and most of class
T	Teacher
[stage directions]	For example [inaudible] or [laughter]
[5]	Indicates the length of a pause of 3 seconds or more
...	Indicated a pause of 2 seconds or less
//	Overlapping speech
<i>/ee/; /ar/</i>	Letter sounds and parts of words that are being sounded but articulated together are italicised and enclosed within slash marks e.g. <i>/qu/</i> , <i>/str/</i> these word parts may represent phonemes or larger word segments that are being sounded out
<i>elephant</i>	Words being focused on or studied are in italics; the words might be seen on the board or elsewhere
<i>R; B</i>	Letter names are in capitals and italicised
<i>Once upon a time there was...</i>	Text read aloud is italicised

**vPrism coding**

Once the annotated video had been logged into the vPrism database, researchers were able to navigate and study it in detail in order to identify the particular portions of video (events) that evidenced demonstration of each the CLOS teaching practices. An event was defined as the portion of video that characterised a CLOS teaching practice. vPrism also made it possible for coding to overlap, that is, for the same segment of transcribed video to be coded for multiple events. The ability to have overlapping codes was necessary in this study as classrooms are complicated places where many events happen simultaneously. To cope with the classroom dynamics, coding was divided by dimension so that the data could be generated in detail at each level of CLOS. For example, the first round of coding focused on the presence/absence of teaching practices under the Participation dimension. The second round of coding went through the same material but focused on the presence/absence of teaching practices under the Knowledge dimension.

The selected two hours of video recordings from each classroom was divided into analysable portions called episodes. Each episode was representative of a separate activity, based on the researchers' observations using the CLOS protocol. The average length of an episode was 20 minutes. The consistent presence of a practice or CLOS

item throughout an episode was identified by an in-point (the time at which the event began), and an out-point (the time at which an event ended).

The number of episodes totalled 54, spread across the eleven classrooms. Coding was completed for all 33 CLOS items across each of the episodes. Reliability of the coding was assured by adherence to the operational definitions of each of the teaching practices and the consistent application of the schedule. Each application of the schedule was checked by a common coder. In total, 5.4% of the provisional data points were revised to maintain consistency in application of the CLOS operational definitions across cases and raters, as illustrated in Table 3.5.

Table 3.5 Consistency in coding

Classroom	Episodes (N)	Data Points	Original Score	Revised Score	Changes (N)	Changes (%)
Ana	7	231	25	31	12	5.2
Hannah	5	165	147	157	14	8.5
Jenny	5	165	89	118	29	12.1
Gabby	4	132	68	69	1	0.8
Patricia	6	198	28	28	0	0.0
Isobel/Abby	6	198	99	99	0	0.0
Terry	4	132	55	55	0	0.0
Sarah	6	198	144	142	8	4.0
Jane	6	198	194	192	2	1.0
Sue	5	165	120	144	40	24.2
SUM	54	1782			97	5.4

#### Generation of report data

Data for the qualitative analysis of literacy teaching practices were generated by exporting coded events from the vPrism database. Standard vPrism tables were exported and formatted for the purpose of this study in Microsoft Excel (see Table 3.6 below). The first column shows the event type; in this case the annotated video was coded for the presence of the teaching practice, individualisation. The name of each teaching practice was abbreviated to a five-letter code. The second and third columns show the event in-time and out-time to enable the duration of the event to be calculated. The fourth column shows the transcript related to the video footage, and the fifth column shows the researchers' notes and any other evidence gathered during the coding process.



Table 3.6 Example text report

Event	Time 1	Time 2	Text	Notes
			T: It is very sad ... Far away, there lived a fair princess with golden hair. She ate jelly beans for breakfast, lunch and tea. On her island, the sky was always bright and the wind was always warm. SN: That looks like a ... T: James, what's our rule? S: Should always put your hand up. T: Always put your hand up. So what are you going to do? S: Put my hand up. T: Well put your hand up. Are you going to put your hand up? Yes, James? S: It's a happy island there. T: It's a happy island there. Have a look at the difference. What do you notice about the colours. Have a look at that island ...	
indiv	0:10:50	0:11:36	have a look at that island.	Big Book activity: Teacher reinforces citizenship rules with James, one of the less able children, before accepting his input.

### Qualitative Analyses

The final phase of the project was a cross-case analysis of each of the six CLOS dimensions. Findings from these analyses are reported in Chapters 6-11 of the report. The goal of each cross-case qualitative analysis was to demonstrate differences within a particular dimension across the more effective, effective and less effective teachers as they were observed in their classrooms. The following materials were assembled to guide researchers in preparation of their qualitative analyses:

- **School contexts.** A short written description of the context and circumstances of each school and classroom visited that included demographic data provided by schools, as well as details of school location and teacher background;
- **Score sheets.** A CLOS score sheet that reflected revisions made during the ratings check, and that rated the CLOS score on each item and dimension, across each episode;
- **Short episode descriptions.** A brief description of each teaching episode in each classroom to ensure that researchers understood the context of lessons from classes they had not directly observed *in situ*;
- **vPrism files.** A complete set of coded vPrism files on CD;
- Graphic display of the CLOS teaching practices. An estimate of the proportion of episodes in each CLOS dimension present in each classroom, colour-coded for *more effective*, *effective* and *less effective teachers* (see Figure 3.4, below for an example).
- **Progress map of CLOS teaching practices.** An output of the Rasch analyses (see Figure 5.6) that provided each researcher with the probable order in which each of the teaching practices in each CLOS dimension would be present in more effective, effective and less effective teachers' classrooms.
- **Text reports.** The text reports produced using vPrism for each of the six CLOS dimensions ordered by teaching practice; for example materials for the Participation dimension contained text reports for each event in which the Participation teaching practices were coded, for each of the observed classrooms.

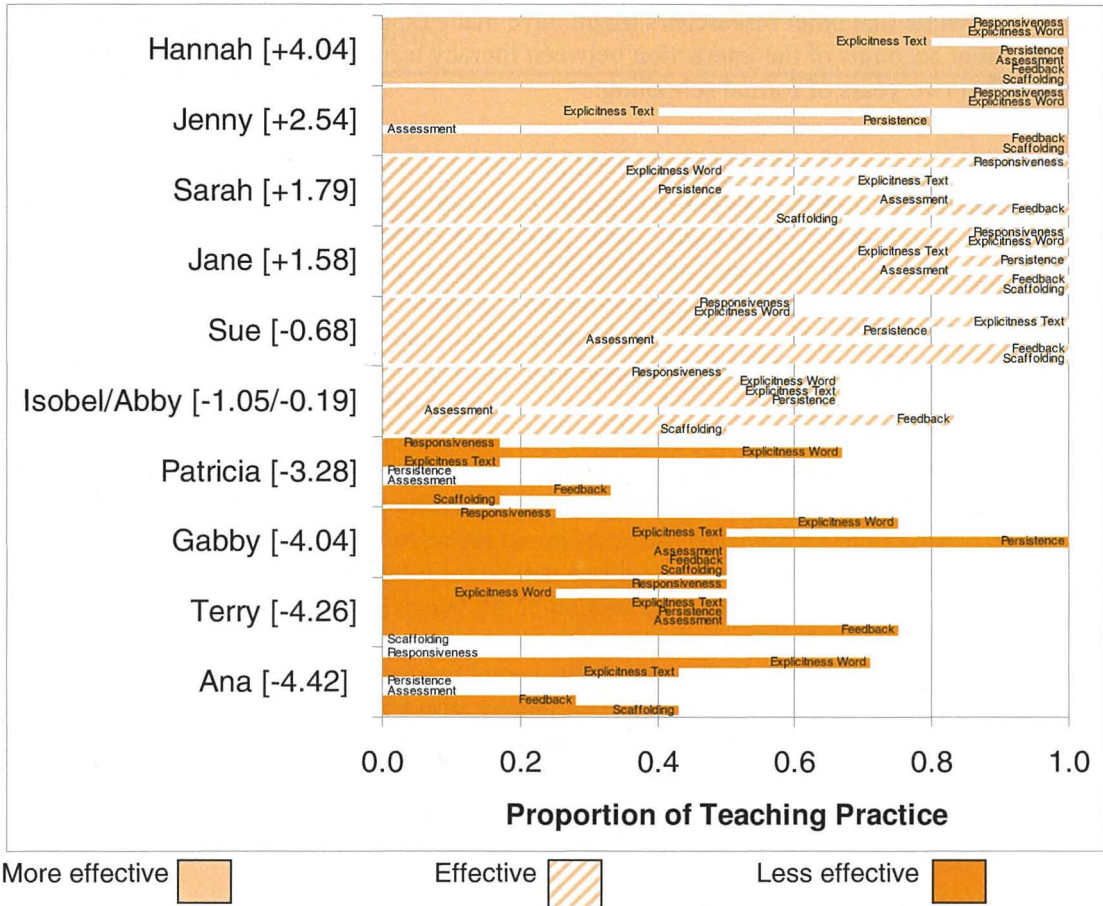


Figure 3.4 Proportion of teaching practices present in episodes, by teacher, for the Support dimension of CLOS<sup>6</sup>

**Limitations**

This was a large and complex study, involving a substantial literature review and seven subsequent empirical phases of instrument development, data collection and analysis. Notwithstanding the scale and complexity of the study, several limitations should be noted for responsible interpretation of the results.

One set of limitations concern the ‘generalisability’ of the findings. Although the nationally representative sample of children assessed was almost 2,000, the calculation of class/teacher-level residuals yielded statistical differences in literacy learning (adjusted mean, class-level residuals) in just 16% of classes. When permission to visit these teachers was sought, not all were willing or available to participate. Some schools had been willing to participate in the assessment phase but were not willing to allow children and teachers to be videotaped, some teachers were no longer teaching the same grade as the *LLANS* assessment year and some teachers had moved to different schools.

A further set of limitations concerns the application of operational definitions in the study. Literacy was defined as school English literacy; growth in literacy was defined in terms of mean class/teacher-level residuals on the *LLANS literacy* tasks; and teaching effectiveness was defined in terms of the CLOS observation schedule. In each of these instances the research team was limited by the definitional matrix it had constructed. Although we have been careful to share our reasons for the definitions we have adopted,

<sup>6</sup> Figures in parentheses indicate the children’s learning gain adjusted residual in standard deviation units for each teacher’s classroom.

it is possible that other researchers might have made other decisions, and produced different accounts of the interaction between literacy teaching and literacy learning in the first two years of formal schooling.

## Chapter 4: Student Learning Gains

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### Overview

What makes a difference in how much children learn at school? Explanations vary, but the school effectiveness literature routinely distinguishes between home background effects and school effects (Scheerens & Bosker, 1997). Among the home effects, influences are often reported from school intake characteristics such as the socioeconomic status, home language and gender of children. Among school effects it is conventional to distinguish between class/teacher-level effects such as the cohort of children in the class and their class teacher, and whole-school effects over and above the individual class/teacher-level effects.

Australian school effectiveness studies have found that class/teacher-level effects are much stronger than school-level effects (see Rowe 2003a, 2004). For example, after adjusting for students' prior achievement (from students' first year of schooling to their twelfth year), Hill and Rowe (1996) found that residual variation at the class/teacher-level was 38-45 percent in English and 53-55 percent in mathematics. In contrast, they found that school-level effects ranged from 4 percent to 9 percent of the residual variance. Similarly, Rowe, Turner and Lane (2002) found that after adjusting for differences in student academic ability, gender and school sector, 'class/teacher effects consistently accounted for an average 59 percent of the residual variance in Year 12 students' achievements, compared with a mere 5.5 percent at the school-level'. Internationally, similar results have been reported by Scheerens, Vermeulen and Pelgrum (1989), Tymms (1993), and by Muijs and Reynolds (2001).

A major interest of the present study is in these powerful class/teacher-level effects rather than school level effects, namely: How much of the variation in student learning outcomes can be attributed to differences at the class level, and in particular to differences among teachers? Following the 'value-added' measurement approaches advocated by Fitz-Gibbon (1996), Goldstein (2001), Tymms (1999), and further developed in an Australian context by Rowe (2001, 2003b), the study fitted multi-level variance components models to a data set including child and teacher background information and *LLANS literacy* assessment data collected at the beginning and end of the first and second years of formal schooling in a nationally representative sample of schools.

### Measures of student literacy learning gain

*LLANS literacy* assessment data was collected from children in 99 participating schools across Australia. Children's scored responses on the literacy assessment items were calibrated on a common logit scale<sup>7</sup> by fitting the student response data to Rasch measurement models using *ACER QUEST* (Adams & Khoo, 1999). In the case of items scored with ordered response categories, a partial credit model was used, as specified by equation [4.1]. In such cases the response of an individual  $n$  to item  $i$  is indicated by the item score  $X_{ni}$  which can take on any of the integer values 0, 1, 2, ...,  $m_i$ , such that the probability ( $P$ ) of observing a specific score  $x_{ni}$  is given by:

---

<sup>7</sup> To ensure that children's item responses were calibrated on the *LLANS literacy* scale, they were 'anchored' to the item threshold values obtained from the first four waves of data in ACER's *LLANS* project (see Meiers & Rowe, 2002; Rowe, 2002).

$$P(X_{ni} = x_{ni}) = \frac{\exp \sum_{j=0}^{x_{ni}} w_{ij} (\beta_n - \delta_i - \tau_{ij})}{\sum_{k=0}^{m_i} \exp \sum_{j=0}^k w_{ij} (\beta_n - \delta_i - \tau_{ij})}$$

[4.1]

where  $\beta_n$  is the ability of individual  $n$ ,  $w_{ij}$  is the score assigned to category  $j$  for item  $i$ , and  $\delta_i$  and  $\tau_{ij}$  are the parameters that characterise the difficulty of item  $i$ . In the case of dichotomously-scored items, equation 4.1 reduces to:

$$P(x_{ni}) = \frac{\exp[x_{ni}(\beta_n - \delta_i)]}{1 + \exp[x_{ni}(\beta_n - \delta_i)]}$$

[4.2]

A particular advantage of having constructed a common *LLANS literacy* scale upon which children's achievements can be located, is that it can be used to compare: (1) the achievement progress of children over time, and (2) the relative achievement levels of student cohorts at different stages (or year levels) of schooling (Figure 4.1). Moreover, the obtained data may be subsequently modelled to identify major sources of variation, and the magnitude of factors explaining that variation.

Figure 4.1 (below) shows the location (on a logit scale) of the *LLANS literacy* items according to their difficulties for each of the four assessments (right-hand side), and the location of children according to their performances (X's on the left-hand-side). To assist interpretation and for subsequent reporting and explanatory modelling, the logit values were transformed to a scale: 0 logits = 50 score points; 1 logit = 10 score points.

### Multilevel analyses

To estimate the proportion of variance in children's literacy achievements due to between-class/teacher differences (for the purposes of identifying teaching and learning practices used by teachers whose children's achievement growth was higher or lower than expected), we fitted a two-level variance components model to the literacy assessment data. Using the subscript  $i$  to refer to the child and the subscript  $j$  for the class/teacher, this model may be written in two parts:

a within-schools, among students part -

$$y_{ij} = \beta_{0ij}x_0 + e_{ij},$$

[4.3]

and a between-class/teacher part -

$$\beta_{0ij} = \beta_{0j} + u_{0j}.$$

[4.4]

From equation [4.1],  $y_{ij}$  (Literacy) is the dependent or response score for child  $i$  in class/teacher  $j$ . The intercept  $\beta_{0ij}$  in this within-class/school relationship is the average level of children's *Literacy* scores for class/teacher  $j$ , and  $e_{ij}$  is a random variable – assumed to have a mean of zero – representing the sum of all influences on  $y_{ij}$ . The  $x_0$  term in equation [4.3] is a column vector of unities representing the constant slope (intercept) for class/teachers. From equation [4.4], the coefficient  $\beta_{0j}$  is the mean Literacy score of children in the sample of schools, and  $u_{0j}$  is a residual that varies randomly between class/teacher groups. Since  $\beta_{0j}$  may vary across classes/schools,  $\beta_{0j}$  is treated as a random variable at level 2.

**LLANS literacy scale (Effective Practices – all children and all items)**

Item Estimates (Thresholds) 17/ 3/2002 10:56  
 all on **Literacy** (N = 3944 L = 232 Probability Level=0.50)

6.0 logits	X	
	X	
	X	
	X	4WR5.4 4TW6.3
	X	
	X	3RS4.3
	XXXX	
	XXX	
	X	3MW1.5 4WR2.5
	XXX	4WR5.3
	XXXX	4WR1.5
	XXX	3MW4.5 4SP8.3
	XX	4ST1.3
5.0		
	XXXXXXX	4ST5 4WR4.4 4TW5.3
	XXXXXXXXXX	4WR2.4
	XXXXXX	3MB2.2 4STa.2 4SP7.3
	XXXXXXXXXX	3SS4.3
	XXXXXX	3SS5.3
	XXXXXXXXXX	
	XXXXXXXXXX	3MW2.4
	XXXXXXXXXX	4SP6.3 4TW6.2
	XXXXXXXXXXXXXXXXXX	1CP3
	XXXXXXXXXXXX	3MW1.4
	XXXXXXXXXXXXXXXXXX	3IN8 4M2.4 4TW5.2
	XXXXXXXXXXXXXXXXXX	3KS3.3 4ST7.2 4ST8.2 4WR1.4 4WR4.3 4TW2.3 4PA5
	XXXXXXXXXXXXXXXXXX	2MR6.3 2SWg 3IW7 4ST6 4ST9 4WR3.3
	XXXXXXXXXXXXXXXXXX	3SS5.2 3SS6.2
	XXXXXXXXXXXXXXXXXX	3SS4.2
	XXXXXXXXXXXXXXXXXX	3KS2.3 3MB9.2 4ST4 4TW2.2
	XXXXXXXXXXXXXXXXXX	4TW3.3 4TW6.1
	XXXXXXXXXXXXXXXXXXXX	2PC9 3IWo 4TW4.3 4PA8
	XXXXXXXXXXXXXXXXXXXX	1CP9.2 2HS5 3IW4 3MW4.4 3SS3.3 4SP3.3 4TW3.2 4PA3
	XXXXXXXXXXXXXXXXXXXX	3MW1.3 3SS2.3 4STc 4M5.2 4WR2.3 4PA4
	XXXXXXXXXXXXXXXXXXXX	2SWe 2SM 3K7 4M2.3 4WR4.2 4TW4.2
2.0		
	XXXXXXXXXXXXXXXXXXXX	3K2.2 3MB1.2 3MB6.2 4ST1.2 4TW5.1
	XXXXXXXXXXXXXXXXXXXX	3IW9 3MW2.3 4STa.1 4SP5.3 4M5.1
	XXXXXXXXXXXXXXXXXXXX	3SS3.2 4SP5.2 4WR5.2
	XXXXXXXXXXXXXXXXXXXX	1EP3.2 2ObA 3IW3 3MB5.2 3SS2.2 3SS6.1 4SP3.2 4SP5.1 4SP6.2 4SP8.2 4M6.3 4PA9
	XXXXXXXXXXXXXXXXXXXX	3K4.2 3PA4 4ST7.1 4SP2.3 4PA6
	XXXXXXXXXXXXXXXXXXXX	1BO3.2 1CP9.1 2HS2 2SWd 3K8 4M7 4TW4.1
	XXXXXXXXXXXXXXXXXXXX	3KS4.2 4STo 4M1.2 4M2.2
	XXXXXXXXXXXXXXXXXXXX	1Cpe.2 2HS9.2 3K5 3SS4.1 3SS5.1 4SP4.3 4M6.2 4WR3.2
	XXXXXXXXXXXXXXXXXXXX	2HS3.2 2MR6.2 3MW4.3 4SP2.2 4SP6.1 4SP7.2
	XXXXXXXXXXXXXXXXXXXX	1EP7.2 3K3.3 3IW6 4SP2.1 4SP7.1 4M3 4TW3.1 4PA7
1.0		
	XXXXXXXXXXXXXXXXXXXX	1CP2.2 3K3.2 3MB3 3MB4 3MW3.4 3PA3 4SP1.3 4M4.2 4WR1.3 4WR4.1
	XXXXXXXXXXXXXXXXXXXX	2MR5.4 3K4.1 4WR2.2 4TW1.3 4TW2.1
	XXXXXXXXXXXXXXXXXXXX	2PC8 2Wsk 3K2.1 4SP1.2 4SP3.1 4TW1.2
	XXXXXXXXXXXXXXXXXXXX	3IW2 3SS3.1 4ST8.1 4SP1.1
	XXXXXXXXXXXXXXXXXXXX	1BO3.1 1CP8.2 2SWo 3PA2 4TW1.1
	XXXXXXXXXXXXXXXXXXXX	2HW4.2 3K3.2 3MW2.2 4ST2 4M1.1
	XXXXXXXXXXXXXXXXXXXX	1PA9 1CP2.1 3SS2.1 4WR1.2
	XXXXXXXXXXXXXXXXXXXX	2HS3.1 2HW6.4 2HS5 2HSe.2 2WSh 3K1 3K51.3 3IW5 3PA1 4SP4.1 4SP4.2 4M6.1
	XXXXXXXXXXXXXXXXXXXX	1EP2 2HS9.1 2HS5.3 2MR3.2 2MR6.1 2NSd.2 2NSf.2 2SWc 3K6 3K52.2 3IW1 3MW1.2 4ST1.1 4M4.1
	XXXXXXXXXXXXXXXXXXXX	1EP7.1 1PA6 1RE1.2 1CP1.2 1CPa 2HS4.3 2HS7.2 2MR5.3 2WSc.2 2WS 3MB8 3SS1.3 4SP8.1
	XXXXXXXXXXXX	1PA3 1PAb 2SW8 2SW9 2SWa 3K51.2 3SS1.2 4WR1.1
	XXXXXXXXXXXX	1EP3.1 1CPe.2 2OB1 2OB6 2PC5 2NSf.1 2SWb 3K3.1 3MW1.1 4PA1 4PA2
	XXXXXXXXXXXX	2HW5.2 2WSc.1 2WS1 2WSm 3K52.1 3K54.1
	XXXXXX	1CP8.1 2HS7.1 2MR1.2 2MR5.2 2Wsd.1 3MW3.3 3SS1.1
	XXXXXX	1EP4.2 1CPb 2HW6.3 2OB9 2PC7 2WSe.1 3WSj 4ST3 4STb
	XXXXXX	2OB7 3K51.1 3MB7.2 3MB9.1 4WR3.1
	XXXXXX	1CP1.1 1CPo.1 2HW4.1 2OB8 2PC6 2SW5 2SW6 3K53.1 3MB2.1 3MB5.1 4M2.1
	XXX	1PAo 2WS2 2LS9 3MW2.1
	XXX	2PC3 2PC4.2 2LSj
	XXX	2LSo 2LS1 2LSm 3MB1.1
-1.0		
	XX	1PAa 3MB6.1
	XX	1CPe.1 2HW5.1 2MR2
	XX	1PA5 2MR3.1 4WR2.1
	XX	1BO5 2ObO
	X	1PA7 1BO6.2 1CP7 2HW3 2HS8 2WSo
	XX	1EP4.1 1PA8 2MR1.1 2WS7 2LSa
	X	2WS4 2WS9 2H5a 2LSb 2SW2 2SW3 2SW7
	X	2HS8 2OB5 2LS8
	X	1BO8 2OB4 2PC2 2LS4 2LS5
-2.0		
	X	1BO6.1 2HW1.2 2MR7 2PC4.1 2LS6
		1CP4 1CP6 2WS3
		1EP8 2HS4.2 2LS7 2LSc 2LS1 2LSp
		2LSe
		1RE1.1 2MR8 3MB7.1
		1EP5.2 2LS2 2LSk 2LSn 2LSq
		2SN4
		1EP6 1PA4 1BO4 1BO7 2OB2 3MW4.2
		1EP1 1CP5 2PC1 3MW3.2
		2HS6 2HW6.2 2LSb
-3.0		
		1PA1 1BO2
		2HS4.1
		1CPc 2OB3
		2LSg
		1EP5.1

Each X represents 6 children

Figure 4.1 LLANS literacy (all items) student-item map on a logit scale

By combining equations [4.3] and [4.4], a single equation version of the model can be written as follows:

$$y_{ij} = \beta_{0ij}x_0 + (u_{0j} + e_{ij}), \quad [4.5]$$

where  $\beta_{0ij}x_0$  is the fixed part of the model and the bracketed residual terms at level 2 ( $u_{0j}$ ) and level 1 ( $e_{ij}$ ) constitute the random part of the model.

Note that  $\text{var}(u_{0j}) = \sigma_{u0}^2$ ,  $\text{var}(e_{0ij}) = \sigma_{e0}^2$ ; and the distribution assumptions for the random coefficients are:

$$u_{0j} \sim NID(0, \sigma_0^2), \text{ - where } \sigma_0^2 \text{ is the variance of the level 2 (school) residuals } u_{0j},$$

$$e_{ij} \sim NID(0, \sigma_e^2), \text{ - where } \sigma_e^2 \text{ is the variance of the level 1 (teacher) residuals } e_{ij},$$

and

$$u_{0j} \text{ and } e_{ij} \text{ are normal and independently distributed (NID).}$$

Equations 4.3 to 4.5 (specified above) are produced interactively in *MLwiN* (Rasbash *et al.*, 2001) via the *Equations Window*. It is important to note that the purpose of these equations is to model the class/teacher location-dependence of children's Literacy achievements, such that those locations (class/teacher groups in this case) with higher or lower than expected mean performance may be identified.

The intra-class correlation is given by  $\rho = \sigma_{u0}^2 / (\sigma_{u0}^2 + \sigma_{e0}^2)$ . This correlation provides an estimate of the proportion of the total variance in children's *LLANS literacy* scores that is due to variation between class/teacher groups. To estimate the extent to which classes/schools differ in their mean levels of literacy achievement, the ratio of the  $\sigma_{u0}^2$  estimate to its standard error [ $se(\sigma_{u0}^2)$ ] can be referred to the usual Gaussian distribution (*t*-value).

### Sources of variation in first year children's literacy achievements

The results of the fitted base variance-components model for first year children's *LLANS literacy* achievements during Term 1, 2001 are given below, and illustrated graphically in Figure 4.2.

$$y1\text{-lit1}_{ij} \sim N(XB, \Omega)$$

$$y1\text{-lit1}_{ij} = \beta_{0ij} \text{cons}$$

$$\beta_{0ij} = 58.896(0.756) + u_{0j} + e_{0ij}$$

$$[u_{0j}] \sim N(0, \Omega_u) : \Omega_u = [43.171(8.025)] \quad \text{[Between-class/teacher variance]}$$

$$[e_{0ij}] \sim N(0, \Omega_e) : \Omega_e = [118.710(5.746)] \quad \text{[Within class/teacher variance]}$$

$$-2 * \log \text{likelihood(IGLS)} = 7365.409(948 \text{ of } 986 \text{ cases in use})$$

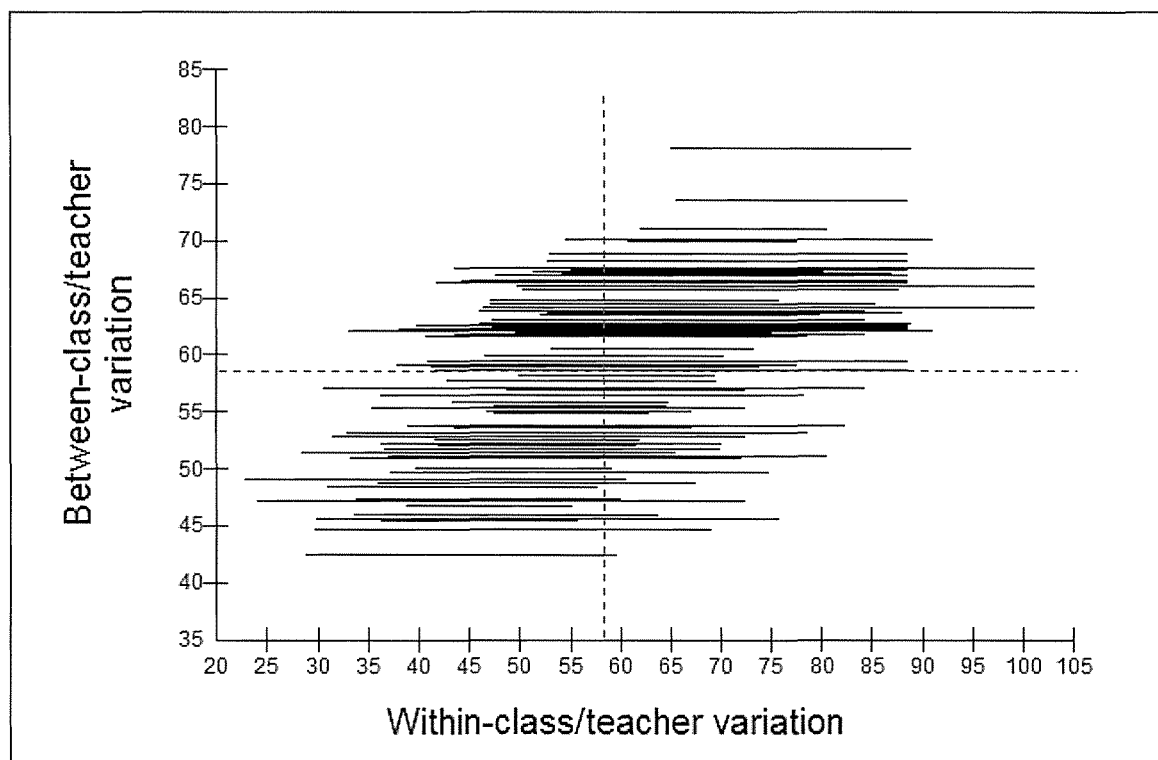


Figure 4.2 Within- and between-class/teacher variation in *LLANS literacy* scores for 948 Year 1 children in 97 class/teacher groups during Term 1, 2001

The variance components model fitted to the first year data from 948 children in 97 class/teacher groups assessed during Term 1 (Y1-LIT1), and illustrated in Figure 4.2, indicates that there was significant variation between class/teachers around the grand mean of children’s *LLANS literacy* achievement scores [58.9 – indicated by the dashed lines]: (1) at the class-level (accounting for 26.7% of the variance), and (2) among children within class/teachers (accounting for 73.3% of the variance).

From Figure 4.2, each line represents a class, and the horizontal ‘width’ of the line represents the range of scores, from left (minimum score) to right (maximum score) within each class/teacher group. The red ‘dashed’ lines indicate the grand mean of first year children’s *LLANS literacy* achievement scores during Term 1.

The results from the fitted, base variance-components model for the repeated first year children’s *Literacy* achievements during Term 4, 2001 are given below, and shown graphically in Figure 4.3.

$$y1\text{-lit}2_{ij} \sim N(XB, \Omega)$$

$$y1\text{-lit}2_{ij} = \beta_{0ij} \text{cons}$$

$$\beta_{0ij} = 63.971(0.873) + u_{0j} + e_{0ij}$$

$$\begin{bmatrix} u_{0j} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} 53.216(10.189) \end{bmatrix} \text{ [Between-class/teacher}$$

$$\begin{bmatrix} e_{0ij} \end{bmatrix} \sim N(0, \Omega_e) : \Omega_e = \begin{bmatrix} 135.927(7.024) \end{bmatrix} \text{ [Within class/teacher variance]}$$

$$-2 * \text{loglikelihood(IGLS)} = 6631.594(838 \text{ of } 986 \text{ cases in use})$$



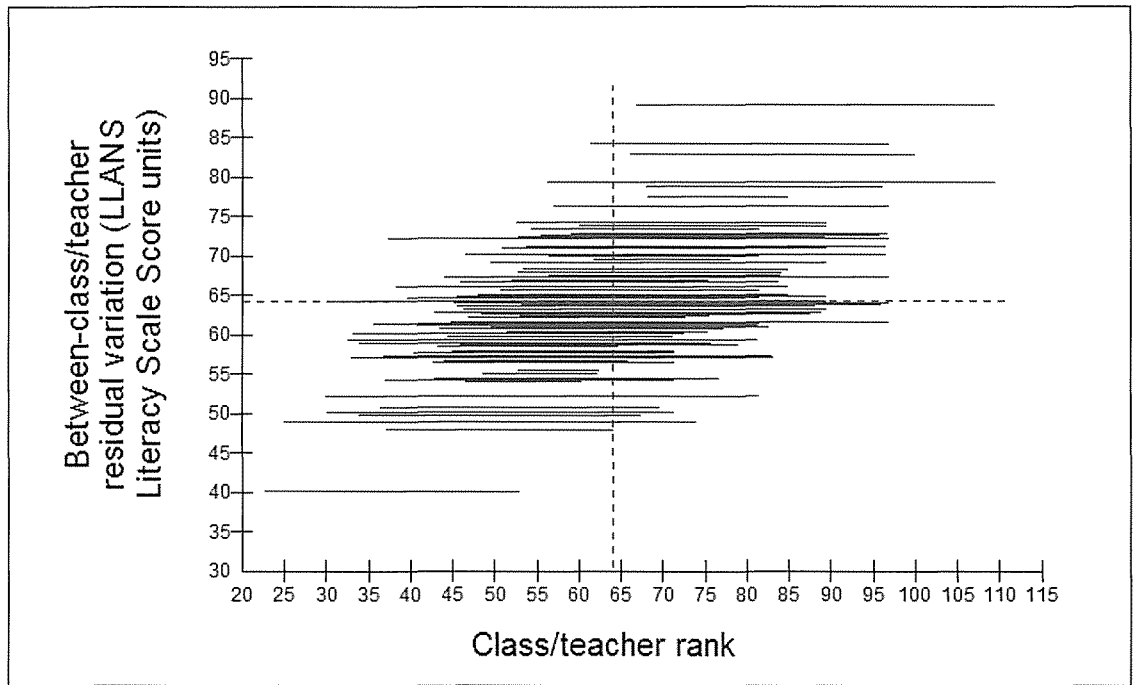


Figure 4.3 Within- and between-class/teacher variation in *LLANS literacy* scores for 838 first year children in 89 class/teacher groups during Term 4, 2001

The variance components model fitted to the first year data from the second assessment occasion during Term 4, 2001 (Y1-LIT2), indicates that there was significant variation around the grand mean of children’s *LLANS literacy* achievement scores [64.0 – indicated by the dashed lines]: (1) at the class/teacher-level (i.e., a significant 28.1% of the variance due to differences between classes), and (2) 71.9% of the variance due to differences between children within class/teacher groups.<sup>8</sup>

These differences, however, should not be over-interpreted since the Y1-LIT2 variance estimates have not been adjusted for relevant student intake or contextual explanatory variables. Hence, in the following multilevel regression model, children’s Y1-LIT2 scores (during Term 4, 2001) are adjusted for their Y1-LIT1 scores (Term 1, 2001) by fitting Y1-LIT1 (i.e., prior achievement) as an explanatory variable in the fixed-part of the model.

$$y1\text{-lit}2_{ij} \sim N(XB, \Omega)$$

$$y1\text{-lit}2_{ij} = \beta_{0ij}\text{cons} + 0.787(0.025)y1\text{-lit}1_{ij}$$

$$\beta_{0ij} = 17.380(1.584) + u_{0j} + e_{0ij}$$

$$\begin{bmatrix} u_{0j} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} 13.094(3.072) \end{bmatrix} \quad \text{[Between-class/teacher residual variance]}$$

$$\begin{bmatrix} e_{0ij} \end{bmatrix} \sim N(0, \Omega_e) : \Omega_e = \begin{bmatrix} 67.691(3.502) \end{bmatrix} \quad \text{[Within class/teacher residual variance]}$$

$$-2 * \log\text{likelihood(IGLS)} = 5988.074(836 \text{ of } 986 \text{ cases in use})$$

As expected, prior achievement (Y1-LIT1) is a strong and significant predictor of first year children’s achievement progress in *LLANS literacy* – accounting for 57.3% of the

<sup>8</sup> Note that between the two assessment occasions, data were not available from 8 classes and 110 children.

variance in Y1-LIT2. Although the residual variance estimate for literacy progress at the class/teacher-level is notably reduced (i.e., from 28.1% to 16.2%), it remains stable and statistically significant.

To estimate the proportion of residual variance at the class/teacher-level, after accounting for prior achievement, we undertook a learning-gain, ‘value-added’ analysis of residuals (i.e., achievement level adjusted for prior achievement). The relevant class/teacher-level plot of mean-point residual estimates for 89 classes is presented in Figure 4.4. Note that when the uncertainty intervals for a given class/teacher group do not overlap the population mean (zero dotted line), the first year children in that class have achieved ‘better than expected’ on the Term 4 *Literacy* assessments – given their prior achievement during Term 1. Similarly, when uncertainty intervals overlap the population mean (zero dotted line), the first year children in that class have achieved ‘less than expected’. First year classes selected for qualitative observation in the site-study phase of the project were chosen on the basis of these ‘better’ and/or ‘less than expected’ learning-gain adjusted residuals.

Further explorations were undertaken to explore the impact of child-level explanatory variables (such as family circumstances) and teacher-level explanatory variables (such as education and experience) on estimates of class-level differences. Unfortunately, there were many more missing data on teacher- and child-level intake variables required for the intake adjusted ‘value-added’ estimates than there had been on assessment variables used in the simpler learning-gain ‘value-added’ estimates summarized in Figure 4.4. Indeed, missing background data reduced the effective sample size from 986 cases to 433 in first year and from 986 to 699 in the second year of schooling. For this reason, intake-adjusted residuals were not used to identify classes for more detailed qualitative investigation during the site-visit stage of the study.

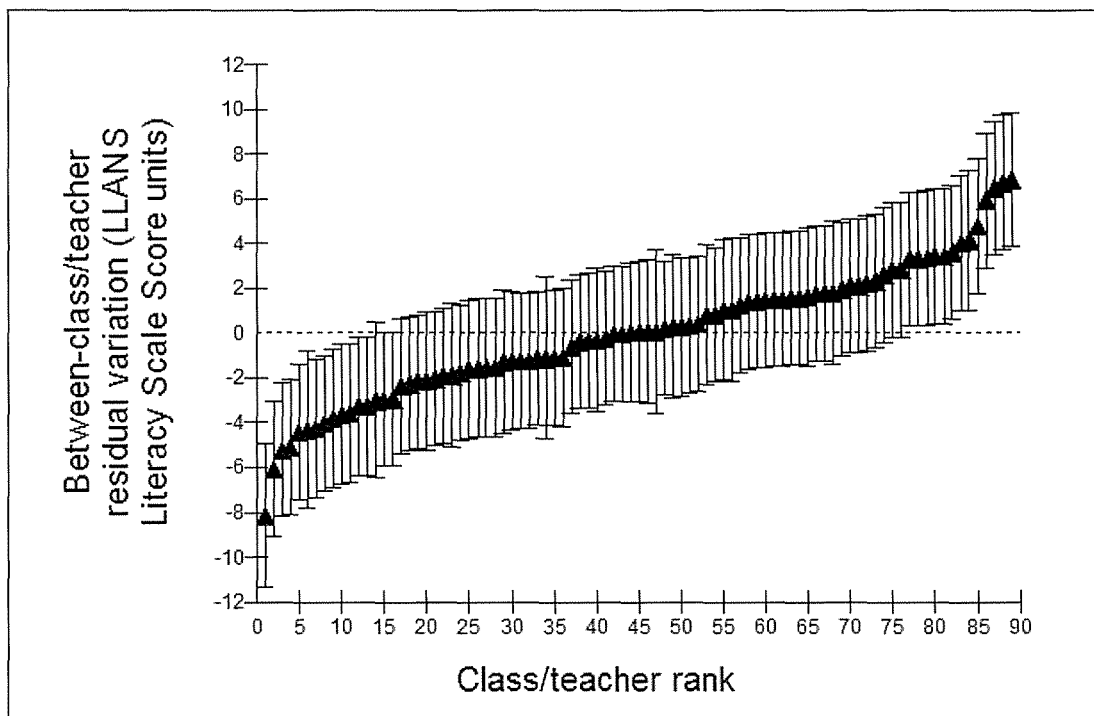


Figure 4.4 Ranked first year class/teacher-level residuals, showing adjusted mean-point estimates bounded by 95% ‘uncertainty’ intervals

**Sources of Variation in Second Year Children's Literacy Achievements**

The results of the fitted base variance components model for second year children's *Literacy* achievements during Term 1, 2001 are given below, and illustrated graphically in Figure 4.5.

$$y2\text{-lit1}_{ij} \sim N(XB, \Omega)$$

$$y2\text{-lit1}_{ij} = \mu_{0ij} + \text{cons}$$

$$\mu_{0ij} = 70.005(0.644) + u_{0j} + e_{0ij}$$

$$[u_{0j}] \sim N(0, \Omega_u) : \Omega_u = [28.938(5.664)] \quad \text{[Between-class/teacher variance]}$$

$$[e_{0ij}] \sim N(0, \Omega_e) : \Omega_e = [93.063(4.602)] \quad \text{[Within class/teacher variance]}$$

$$-2 * \log\text{likelihood}(IGLS) = 6844.766(911 \text{ of } 986 \text{ cases in use})$$

The variance components model fitted to the second year data from 911 children in 97 classes in Term 1 (Y2-LIT1), indicates that there was significant variation around the grand mean of children's *LLANS literacy* achievement scores [70.0 – indicated by the dashed lines]: (1) at the class/teacher-level (i.e., significant differences between class/teacher groups – accounting for 22.7% of the variance), and (2) among children within classes (accounting for 77.3% of the variance).

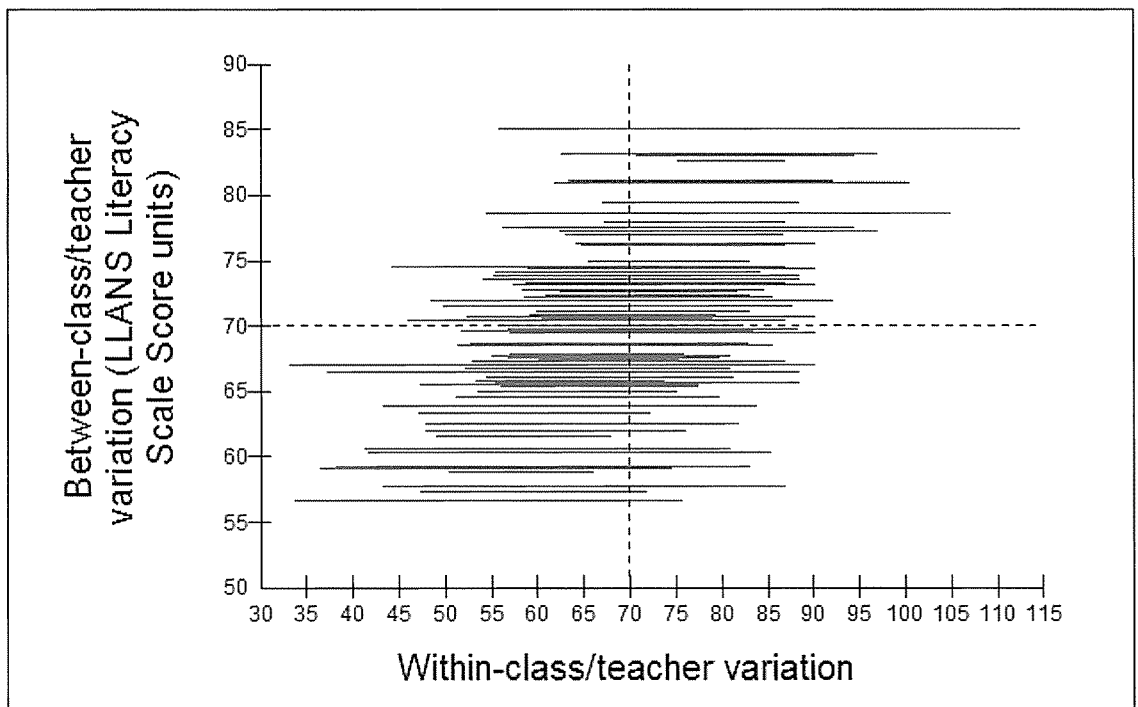


Figure 4.5 Within- and between-class/teacher variation in *LLANS literacy* scores for 911 second year children in 97 class/teacher groups during Term 1, 2001

Similarly, in Figures 4.5 and 4.6 each line represents a class, and the horizontal 'width' of the line represents the range of scores, from left (minimum score) to right (maximum score) within each class/teacher group. The 'dashed' lines indicate the grand mean of second year children's *LLANS literacy* achievement scores during Term 1. The related results for Term 4, 2001 (Y2-LIT2) follow.

$$y2\text{-lit}2_{ij} \sim N(XB, \Omega)$$

$$y2\text{-lit}2_{ij} = \beta_{0ij} \text{cons}$$

$$\beta_{0ij} = 79.376(0.561) + u_{0j} + e_{0ij}$$

$$[u_{0j}] \sim N(0, \Omega_u) : \Omega_u = [19.474(4.261)] \text{ [Between-class/teacher variance]}$$

$$[e_{0ij}] \sim N(0, \Omega_e) : \Omega_e = [85.688(4.367)] \text{ [Within class/teacher variance]}$$

$$-2 * \loglikelihood(IGLS) = 6379.622(861 \text{ of } 986 \text{ cases in use})$$

The variance components model fitted to the second year children’s data from the second assessment occasion during Term 4, 2001 (Y2-LIT2), and illustrated in Figure 4.6 below, indicates that there was significant variation around the grand mean of second year children’s *LLANS literacy* achievement scores [79.4 – indicated by the dashed lines]: (1) at the class/teacher-level (i.e., a significant 18.5% of the variance due to differences between classes), and (2) 81.5% of the variance due to differences between children within classes.<sup>9</sup>

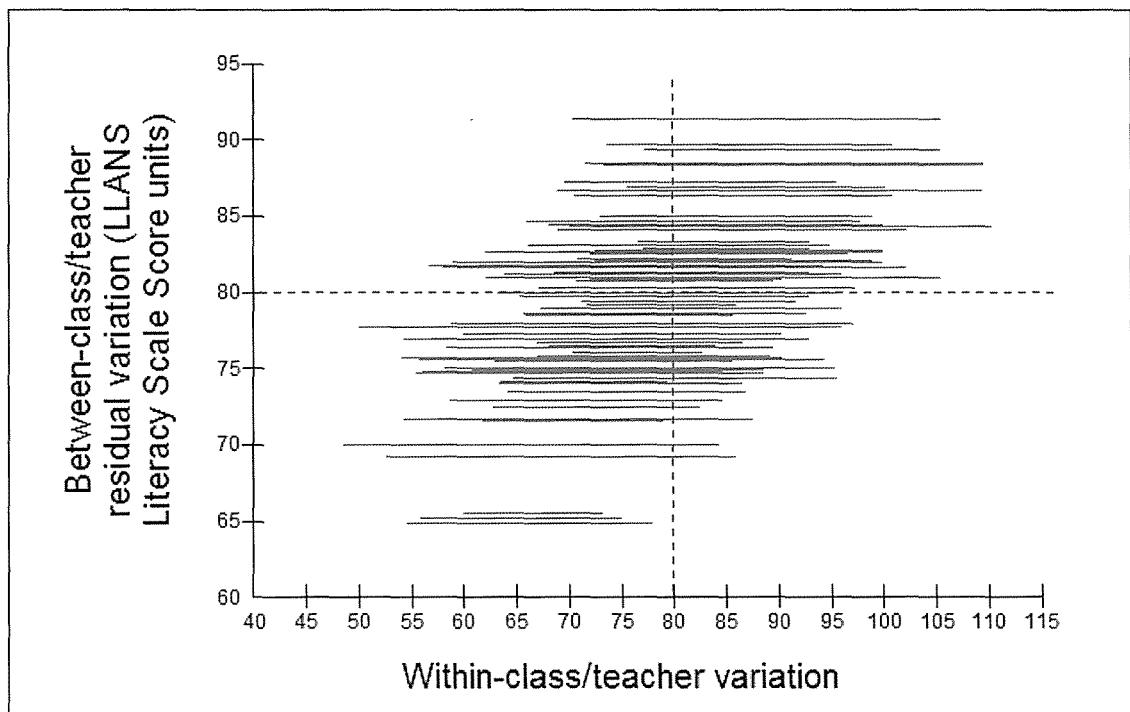


Figure 4.6 Within- and between-class/teacher variation in *LLANS literacy* scores for 861 second year children in 91 class/teacher groups during Term 4, 2001.

As indicated for the first year children’s data, these differences should not be over-interpreted since the Y2-LIT2 variance estimates have not been adjusted for relevant student intake variables. Hence, a multilevel regression model was fitted, in which children’s Y2-LIT2 scores (during Term 4 2001) were adjusted for their Y2-LIT1 scores (Term 1 2001) by fitting Y2-LIT1 (i.e., prior achievement) as an explanatory variable in the fixed-part of the model.

<sup>9</sup> Note that between the two assessment occasions, data were not available from six classes and 50 children.

As expected, prior achievement (Y2-LIT1) was a strong and significant predictor of second year children's achievement progress in *LLANS literacy* – explaining 61.1% of the variance in Y2-LIT2. Whereas the residual variance estimate for *LLANS literacy* progress at the class-level is notably reduced (i.e., from 18.5% to 9.9%), it remains stable and statistically significant.

To estimate the residual variance at the class/teacher-level (after accounting for prior achievement) we undertook a learning-gain, 'value-added' analysis of residuals (i.e., achievement level adjusted for prior achievement). The relevant class-level plot of mean-point residual estimates for 89 classes is presented in Figure 4.7. Second year classes selected for qualitative observation in the site-study phase of the project were chosen on the basis of these learning-gain adjusted residuals.

### Summary of Findings

The purpose of conducting the 'value-added' analyses described in this chapter was to identify class/teacher-level differences in children's literacy learning. Findings from analyses of the *LLANS literacy* achievement data in sample schools and classes provided several estimates of the proportion of variance in children's scores that could be attributed to differences between class/teacher groups.

Findings from fitting base variance components models to the achievement data indicated that 26.7 percent and 28.1 percent (respectively) of the variance in children's *LLANS literacy* scores at the beginning and end of their first year of formal schooling could be attributed to differences at the class/teacher-level. Further, the proportion of the variance that could be attributed to differences in class/teacher membership during the second year of formal schooling was 22.7 percent at the beginning and of the year and 18.5 percent at the end of the year.

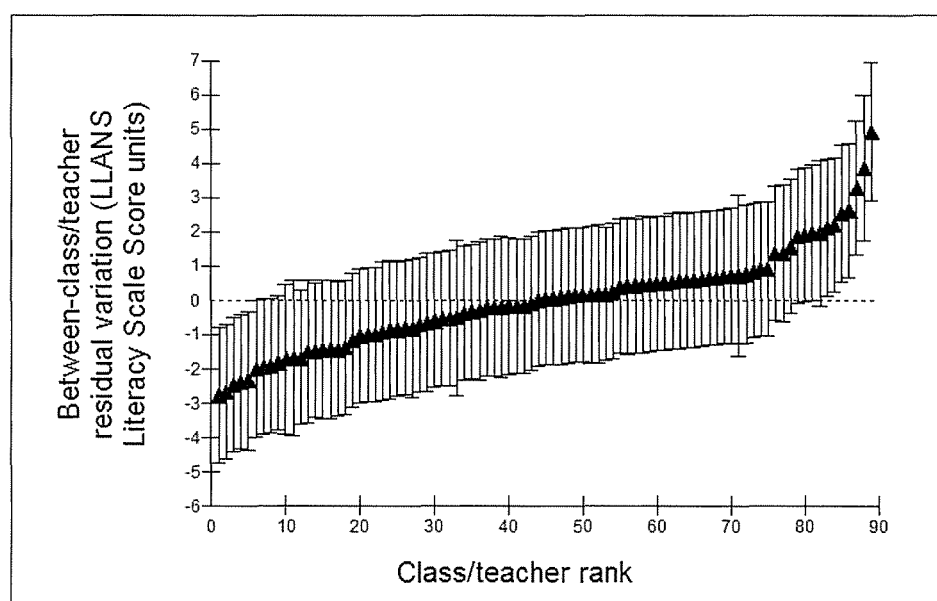


Figure 4.7 Ranked second year class/teacher-level residuals, showing adjusted mean-point estimates bounded by 95% 'uncertainty' intervals

When prior achievement was taken into account in a multi-level analysis of the assessment data, the residual variance estimates were reduced but the results were stable and statistically significant, with 16.2 percent of the variance in learning gain in the first year of schooling attributed to influences at the class/teacher-level, and 9.9 percent of

the variance in learning gain during the second year of schooling attributed to class/teacher-level influences.

Analyses of the residuals at the class/teacher-level indicated that in 12 of the 99 first year of schooling classes, and 7 of the 99 second year of schooling classes, the residuals and their associated 95 percent confidence intervals were greater than the population mean. In these classes, the group of children assessed achieved a learning gain greater than statistically expected. Similarly, in 14 of the first year of schooling classes and five of the second year of schooling classes, the residuals and their associated 95 percent confidence intervals were less than the population mean. In these classes, the group of children assessed achieved a learning gain less than statistically expected. For the intermediate groups, where the class means were neither more nor less than expected, comprised 63 classes in the first year of schooling and 77 classes in the second year of schooling.<sup>10</sup> The distribution of the remaining classes by their learning gain residuals is summarised in Table 4.1.

Table 4.1 Classes by learning gain raw residual

	Number of classes	
	First Year	Second Year
Higher than expected	12	7
As expected	63	77
Lower than expected	14	5
Missing data	10	10
<b>Totals</b>	<b>99</b>	<b>99</b>

To estimate the magnitude of teachers' pedagogical practices on these observed differences in class/teacher-level residuals, teachers in each of the three groups of classes were approached to participate in the follow-up classroom observation phase of the study. As the study estimated learning gain over a school year, classroom observations could not be made until the next year of schooling, when the children normally would be working with other teachers.

Not all teachers and schools approached were willing to participate in the more intensive observation phase of the research project, and some teachers were no longer teaching, or were teaching in another grade. Table 4.2 identifies (by pseudonym) the teachers who agreed to participate, their children's learning gain adjusted residual in standard deviation units, the class rank among the 89 classes in each year without missing data, and the children's year of schooling.

<sup>10</sup> Note that in each of the first and second years of schooling, there were ten schools that originally agreed to participate in the study but did not submit data at either or both of the assessment points.

Table 4.2 Sample details

Teacher	Residual (SD units)	Rank/89	Grouping	Year of School
Hannah	4.036	83	Higher than expected	1
Jenny	2.544	85	Higher than expected	2
Sarah	1.790	68	As expected	1
Sue	0.680	68	As expected	2
Jane	1.583	63	As expected	1
Isobel/Abby	1.047	55	As expected	1
Isobel/Abby	-0.194	39	As expected	2
Patricia	-3.280	12	Lower than expected	1
Gabby	-4.039	8	Lower than expected	1
Terry	-4.263	7	Lower than expected	1
Ana	-4.420	5	Lower than expected	1

### Summary and Conclusions

The 'value-added' phase of this study began with the question: What makes a difference to how much children learn at school? Based on the much higher proportions of variance in children's achievement progress accounted for at the class/teacher-level than at the school-level, the study focused on the class/teacher-level rather than on the school-level as the unit of analysis. Whereas more of the variance observed in children's *LLANS literacy* scores could be attributed to differences within classes than to differences between classes, the differences between class/teacher groups were sufficient to identify three groups of classes in terms of their intake-adjusted learning gain over the year of the study, namely: (1) a group with higher than expected residuals, (2) a group with lower than expected residuals, and (3) a group with residuals within the statistically expected range.

The next phase of the study examined the question of whether there were also differences among these groups of teachers in the approaches they used towards teaching and learning in their classes. Chapter 5 explores this issue, beginning with the description of an observation scale designed to register differences in approaches to teaching.

## Chapter 5: Effective Literacy Teaching

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### Overview

The assessment phase of this project identified stable and significant differences between classes in terms of sample children's intake-adjusted learning gains. Among the more likely influences on the observed variance was the behaviour of the teachers responsible for each of these classes. To assess the relationship between teaching behaviour and literacy learning, a program of classroom observation was undertaken with teachers of these classes, in the year following the assessment phase. The observation instrument (see Chapter 3) used was the Classroom Literacy Observation Schedule (CLOS). This schedule was designed to register teaching practices identified in the project literature review as contributing to effective early years literacy teaching. The schedule identified 33 indicators of literacy teaching practices, grouped into six dimensions.

This chapter provides an analysis of the CLOS data generated from video analysis of the 10 site study visits. The validity of the constructs in the six CLOS teaching practices was estimated via confirmatory factor analysis. The relationship between teachers' membership of the more effective, effective and less effective groups and their CLOS scores was explored through an analysis of variance. Finally, a Rasch analysis (Rasch, 1960) was used to explore whether the CLOS teaching practices constituted a single construct and, if so, whether the literacy teaching practices identified on the scale representing that construct identified differing levels of teacher effectiveness.

### Confirmatory Factor Analysis

The CLOS teaching practice axis confirmed the six key hypothesized dimensions, each containing a set of five, six or seven observed indicators of literacy teaching practices thought to be associated with effective literacy teaching. Table 5.1 provides the number of constituent indicators (items) for each of the six CLOS dimensions, as well as the number of episodes and analysable cases.

Table 5.1 Number of Indicators, Episodes and Analysable Cases in each CLOS Practice Dimension

<b>CLOS Dimension</b>	<b>N items</b>	<b>N episodes</b>	<b>N analysable cases</b>
Participation	5	65	325
Knowledge	6	65	390
Orchestration	5	65	325
Support	7	65	455
Differentiation	5	65	325
Respect	5	65	325

Whereas these six latent constructs cannot be observed directly, they can be inferred from observable indicators of teaching practices. To this end, a one-factor, confirmatory factor analytic (CFA) model was fitted to the observed indicator data relevant to each CLOS dimension. A CFA approach was used in preference to exploratory factor-analytic techniques since CFA approaches allow the specification of target indicators for each latent construct (dimension) on substantive grounds (Long, 1983).

For example, the fitted measurement model for the CLOS dimension of Knowledge is shown in Figure 5.1, which illustrates the one-factor, congeneric measurement model (Jöreskog & Sörbom, 2001) where the latent CLOS dimension of Knowledge (in this case) 'gives rise' to each of the observed CLOS literacy teaching practices (indicators),



all of which are measured with error. Ksi ( $\xi$ ) represents the CLOS dimension, lambda ( $\lambda$ ) is the partial regression effect of Ksi on the CLOS literacy teaching practice indicator ( $x_i$ ), and Delta ( $\delta_i$ ) is the error variance of each  $x_i$ . In simpler terms, each literacy teaching practice indicator ( $x_i$ ) has a dimension effect ( $\lambda_i$ ) and an error ( $\delta_i$ ) in estimating a given CLOS dimension score ( $\xi$ ). Note that accounting for measurement error in this way increases the reliability and validity of each measurement model (Rowe, 2002, 2003).

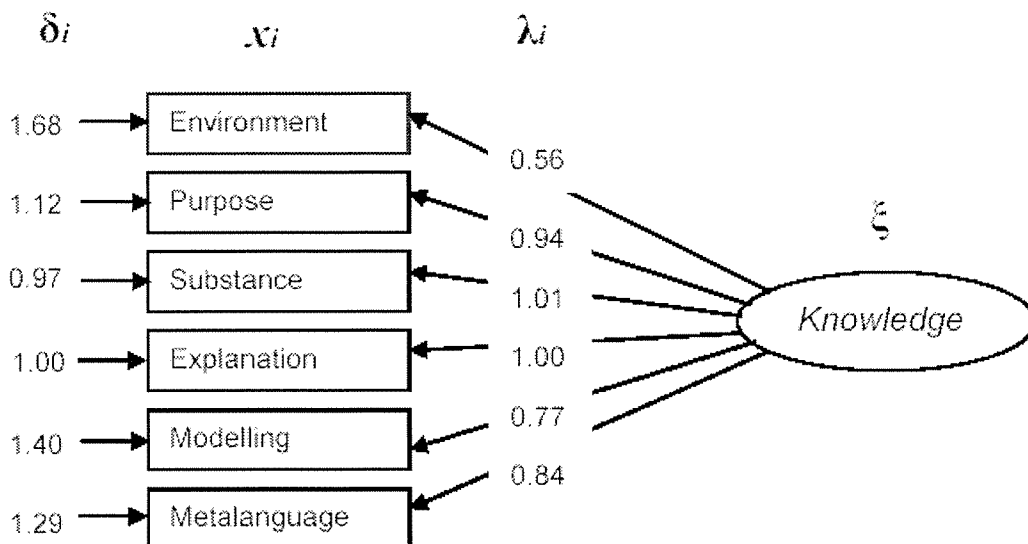


Figure 5.1 Measurement model for CLOS Knowledge dimension

The constituent indicator data for all dimensions were analysed via PRELIS (Jöreskog & Sörbom, 2003a). The indicator data were dichotomous and the small sample sizes prevented analysis of the asymptotic variance-covariance matrices of these tetrachoric correlations using the method of Weighted Least Squares. Therefore matrices of tetrachoric correlations were requested (see Appendix 1) and used as input files for LISREL (Jöreskog & Sörbom, 2003b), under Maximum Likelihood estimation. The ridge option was set for each of the models to counteract instances of multi-collinearity in each of the computed matrices.

Two additional benefits of such confirmatory factor analytic approaches are relevant to this study. First, findings from fitting the CFA measurement models provided an empirical indication of the extent to which each literacy teaching practice actually contributed to the estimation of the computed CLOS dimension scores, using proportionally-weighted factor score regression coefficients. Thus, each dimension was computed as a composite scaled score reflecting the proportionate weight of its contributing literacy teaching practice indicators, and was on the same metric with a continuous distribution, regardless of the number of constituent indicators (with a minimum of '0' and a maximum of '1'). The CLOS dimensions therefore had the benefit of accounting for measurement error, and of being directly comparable in terms of magnitude. For example, using the transform function in SPSS, the score for the Knowledge dimension was computed as follows:

$$\text{compute knowledge} = (\text{Enviro} * 0.067) + (\text{Purpo} * 0.166) + (\text{Subst} * 0.208) + (\text{Explan} * 0.200) + (\text{Model} * 0.111) + (\text{Metal} * 0.130)$$

Details for each of the separate models generated to represent the six CLOS dimensions are summarised in Table 5.2. To convey the reliability of each dimension, both Cronbach's alpha ( $\alpha$ ) and composite scale reliability measures ( $rc$ ) were reported (see Brown, 1989; Fleishman & Benson, 1987). The composite  $rc$  measures of reliability

were the preferred estimates as several studies have found Cronbach's alpha ( $\alpha$ ) to be limited in such circumstances (Rowe, 2002, 2003). Squared multiple correlations ( $R^2$ ) were computed to estimate the proportion of variance in each literacy teaching practice indicator that was explained by its target dimension (see Appendix 2). In respect of model-data fit, multiple fit criteria were examined to avoid reliance on one index (Breckler, 1990). For this study the fit indices applied were the root mean square residual (RMR,  $p < 0.05$ ), the adjusted goodness of fit index (AGFI  $> 0.95$ ) and the chi-square statistic ( $\chi^2$ ,  $p > 0.05$ ). In view of the small sample it was likely that the chi square statistic would yield favourable results, thus this statistic was used with caution. Table 5.2 summarises the composite scale parameters (indicator weights), reliabilities and model goodness-of-fit indices for each of the six CLOS dimensions.

Table 5.2 Composite Scale Parameters and Fit Indices\*

Composite Scale Parameters and Fit Indices*										
Participation (indicators: attention, engagement, stimulation, pleasure, consistency):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Atten	Engag	Stim	Pleas	Consi						
0.225	0.198	0.217	0.190	0.170	0.923	0.820	0.128	0.013	0.997	
Knowledge (indicators: environment, purpose, substance, explanations, modelling, metalanguage):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Enviro	Purpo	Subst	Explar	Model	Meta					
0.076	0.188	0.236	0.227	0.126	0.147	0.859	0.850	1.966	0.050	0.973
Orchestration (indicators: awareness, structure, flexibility, pace, transition):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Aware	Struct	Flexi	Pace	Trans						
0.210	0.246	0.203	0.231	0.109		0.890	0.804	0.257	0.021	0.994
Support (indicators: responsiveness, explicitness word, explicitness text, persistence, assessment, feedback, scaffolding):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Resp	ExpW	ExpT	Persi	Asses	Feedb	Scaff				
0.188	0.048	0.088	0.200	0.144	0.191	0.142	0.787	0.778	4.935	0.084 0.949
Differentiation (indicators: connection, groupings, inclusion, individualisation, challenge):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Connect	Group	Inclus	Individ	Chall						
0.144	0.139	0.257	0.238	0.222		0.811	0.736	2.497	0.072	0.948
Respect (indicators: warmth, rapport, credibility, citizenship, independence):										
Indicator Weights					rc	$\alpha$	$\chi^2$	RMR	AGFI	
Warmth	Rapport	Credibil	Citizen	Indepen						
0.175	0.232	0.226	0.225	0.142		0.859	0.767	2.407	0.069	0.946

\*Table notes: The indicator weights are computed proportionally-weighted factor score regression coefficients; rc is the maximally-weighted composite score reliability;  $\alpha$  is Cronbach's standardised item alpha (Cronbach, 1951).

### Key findings of the Confirmatory Factor Analysis

The results of the CFA analyses summarised in Table 5.2 indicate that the computed model-data fit indices for each of the six CLOS dimensions were 'good' to 'excellent'. Moreover, the results confirmed the content validity of the dimensions, as each group of teaching practices was shown to contribute adequately to the measurement of their respective CLOS dimension. Whereas these indicators and dimensions have been

identified as key teaching practices, it is recommended that cross-validation studies be undertaken to establish the utility and generalisability of the instrument, since the CLOS instrument is a recently developed set of indicators and scales.

#### Analysis of variance

The scaled factor score regression weights from the CFA were subsequently used to compare the total proportion of CLOS literacy teaching practices observed in the classrooms of the three groups of teachers, that is more effective, effective and less effective. To this end, an analysis of variance model (ANOVA) was fitted to the data when the assumptions of normality were satisfied. When normality assumptions were not satisfied the Kruskal-Wallis test was applied (Kruskal & Wallis, 1952).

#### Between groups analysis

The proportionally weighted factor score regression coefficients from the CFA were used to compare the difference between the CLOS total scaled score (from a possible total of 6) for each of the CLOS dimensions observed in the classrooms and grouped according to their 'value-added' result on the *LLANS literacy* assessment. Since the CLOS was derived from a synthesis of strong research findings, it was hypothesised that the CLOS total scaled score would increase according to the 'value-added' grouping; that is, the degree of teacher effectiveness would be strongly related to the CLOS score.

Analyses of normality using the Shapiro-Wilk *W* statistic (Shapiro, Wilk & Chen, 1968) showed that the total scores for two out of the three groups of teachers (more effective, effective and less effective) were significantly non-normal. Therefore the Kruskal-Wallis test, which is the non-parametric equivalent of the One-Way Between groups ANOVA, was applied. Table 5.3 shows that the lowest mean rank of total scores was associated with the less effective teachers and the highest mean ranks of total scores were associated with the more effective and effective teachers. The chi square value ( $\chi^2 = 28.570$ ,  $p < 0.0001$ ) confirmed that the total score on CLOS was significantly related to the 'value-added' results.

Table 5.3 Mean rank of total score across groups, CLOS teaching practices

Teachers	Number of episodes	Mean rank
Less effective	21	13.24
Effective	23	35.57
More effective	10	38.90

A graphical comparison (see Figure 5.2) was used to compare the distribution of total scores in each of these three groups. The horizontal axis specifies the CLOS total scaled score with a minimum of 0 and a maximum of 6. The vertical axis specifies the teacher group and the number of episodes in each group (*N*). Visual inspection of the figure shows that there is substantial overlap between the more effective and effective teacher groups, but no overlap between the more effective and less effective teacher groups and little overlap between the effective and less effective teacher groups. This suggests that the significance of the Kruskal-Wallis result was due to the difference in mean rank of the CLOS total score between the more effective and the less effective teacher groups and most likely between the effective and the less effective teacher groups; but not between the more effective and effective teacher groups.

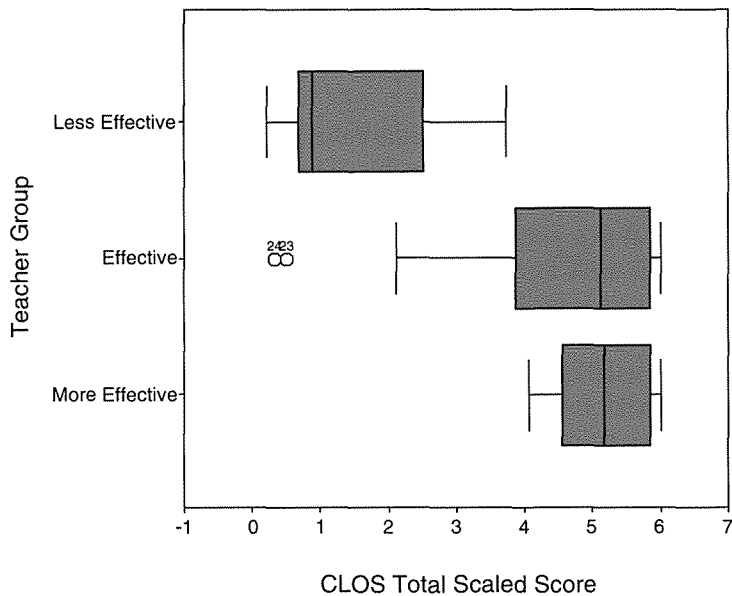


Figure 5.2 Distribution of CLOS total scaled score by teacher group

A between-groups analysis was also undertaken to check whether there was a relationship between the literacy activities registered on the CLOS activity axis (see Table 3.1) and student outcomes. In view of the large amount of literature directed at teachers on ‘how to do’ particular literacy activities (for example *Early Years Literacy Program*, Education Victoria, 1997, and the *First Steps* materials, EDWA, 1994), we tested the hypothesis that the total scaled scores on CLOS would differ according to the literacy activities used by the teachers.

Table 5.4 Rank order frequency of CLOS literacy activities in coded episodes

Activity	Frequency
Shared Book	11
Organisational activities: Independent group work	6
Independent Writing	6
Modelled Writing	5
Isolated Phonics	4
Spelling Activities	4
Shared Writing	3
Language Experience	3
Organisational activities: Task board discussion	2
Reading to Children	2
Guided Oral Reading	2
Interactive Writing	2
Socio-dramatic Play	2
Hearing Children Read	1
Use of commercial literacy program	1
Independent Silent Reading	0
Literacy related computer activities	0

Analyses of the frequency of CLOS literacy activities undertaken in all of the coded teaching episodes (see Table 5.4) showed that two of the 17 literacy activities, independent silent reading and literacy related computer activities, were not observed in any of these episodes. A further two literacy activities, hearing children read and use of commercial literacy program were observed in only one episode. Moreover, for eight of

the 13 remaining literacy activity groups with sufficient numbers to investigate the differences between CLOS total scaled score and literacy activity, the distribution of normality violated assumptions according to the Shapiro-Wilk W statistic.

Given the unequal size of the populations, and in some cases non-normal distribution, a between groups analysis was not considered permissible. Therefore, a graphical comparison (see Figure 5.3) was used to compare the distribution of CLOS total scaled scores in each group. The vertical axis specifies the CLOS observed literacy activity (1-15). The horizontal axis specifies the CLOS total scaled score with a minimum of 0 and a maximum of 6. Visual inspection of the figure shows that there is substantial overlap between the groups, which suggests a very weak relationship between the total scaled score on CLOS and the activity used in each episode. It is, however, noted that the more effective teachers appeared to make more use of the activities of reading to children, interactive writing, independent writing and language experience in the episodes coded for the analysis. On the other hand, less effective teachers made more use of the guided oral reading, isolated phonics and task board activities.

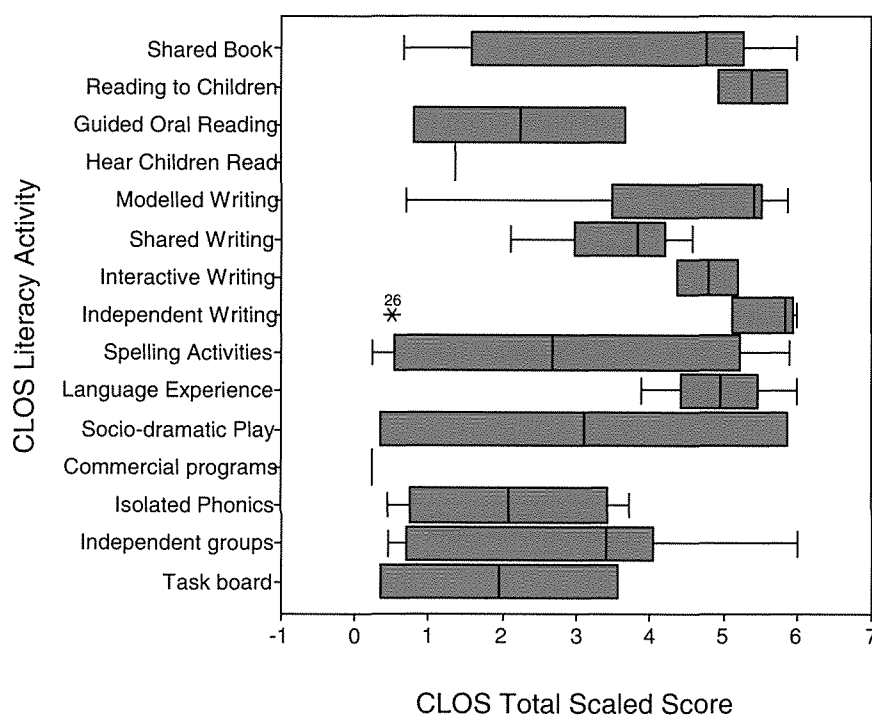


Figure 5.3 Distribution of total CLOS scaled score by activity group

### Rasch Analysis

The third level of quantitative analysis involved fitting the CLOS data to the Rasch model. Use of the Rasch model in this context had two objectives. The first was to understand better the attribute of interest to this study, that is a teacher's repertoire of literacy teaching practices, and the second, to assess the locations of the CLOS literacy teaching practices and the individual teaching episodes observed on the one construct. In order to address both of these objectives it was necessary to establish the content validity of the CLOS instrument (RUMM Laboratory Pty Ltd, 2004). The Rasch analysis estimated teacher effectiveness in terms of a teacher's Repertoire of Literacy Teaching Practices (ROLTP) and confirmed whether each indicator of literacy teaching practice belonged to a uni-dimensional trait. Results of the Rasch analysis, a progress map of CLOS teaching practices, enabled us to investigate which of these practices actually differentiated between the groups of teachers identified by the literacy outcomes of their children, as more effective, effective and less effective.

In view of findings from the literature review it was hypothesised that among the more effective teachers all 33 of the literacy teaching practices were likely to be observed. Among the less effective teachers, it was hypothesised that only the lowest ranked literacy teaching practices were likely to be observed.

The computer program, Rasch Unidimensional Measurement Models (RUMM 2010) was used to analyse the data (Andrich, Sheridan, Lyne & Luo, 2000). Four responses were extreme as they shared the maximum score. The power of the Test of Fit was excellent (Separation Index = 0.926) which indicated that overall the literacy teaching practices discriminated well between episodes. However, the model was highly sensitive to any deviations from expected mean scores. Accordingly, the chi-square probability of model fit was poor ( $p < 0.00001$ ).

A closer analysis of the individual indicator (literacy teaching practice) fit revealed that explicitness word was the worst fitting CLOS indicator. It had a large jump in chi-square probability (RUMM Laboratory Pty Ltd, 2004), indicating that the response pattern for this item did not occur by chance. It also had the largest fitted residual score of 2.135, indicating that actual scores for this item were far from the theoretical values (see Appendix 3).

To further investigate item fit, episodes were grouped into three, based on their total scores for CLOS: low, mid and high on the scale. Rasch modelling is probabilistic and expects that a high ranking episode (high scoring) would demonstrate all the literacy teaching practices located below it on the scale. The explicitness word indicator was located about a third of the way up the scale, near modelling and rapport. It would therefore be expected that explicitness word would be used frequently or observed in most episodes.

The item characteristic curve below (see Figure 5.4) shows that the explicitness word indicator of literacy teaching practice did not discriminate between groups. The curved line (item characteristic curve) shows the theoretical scores. As episodes increase in terms of ROLTP, the probability of an episode containing explicitness word increases.

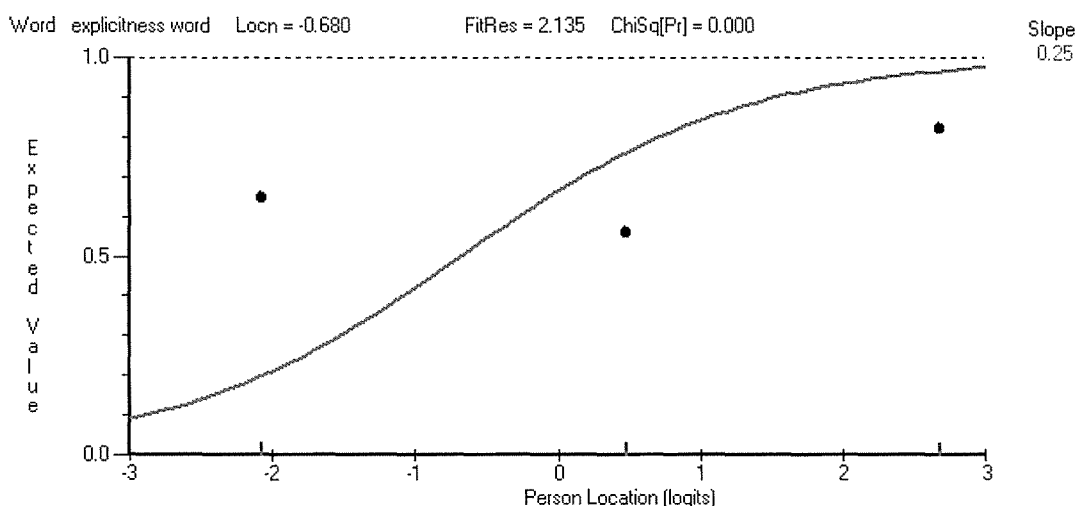


Figure 5.4 Item characteristic curve, most fitting item – under discriminates

The dots show the actual mean score on explicitness word for the three groups: low total score, mid total score, high total score. The first group demonstrated explicitness word much more than expected even though their total score was low. The second and third

groups demonstrated explicitness word less than expected, even though their total scores were higher.

Explicitness word was thus discarded from the set and the analysis was repeated with the remaining 32 CLOS literacy teaching practices. Overall fit statistics were calculated for the amended model. The power of the Test of Fit was again excellent (Separation Index = 0.927). Figure 5.5 illustrates that the spread of episodes (persons) is greater than the spread of the literacy teaching practices (items/indicators). Thus, little information is gathered by this measure on the episodes above 3 logits and below -3 logits. In other words, the CLOS is limited in that it does not give information about the episodes with the widest and most narrow repertoires of literacy teaching practices. The apparent 'ceiling' and 'floor' effects of the CLOS could be related to the sample used in this study, or the application of the coding schedule.

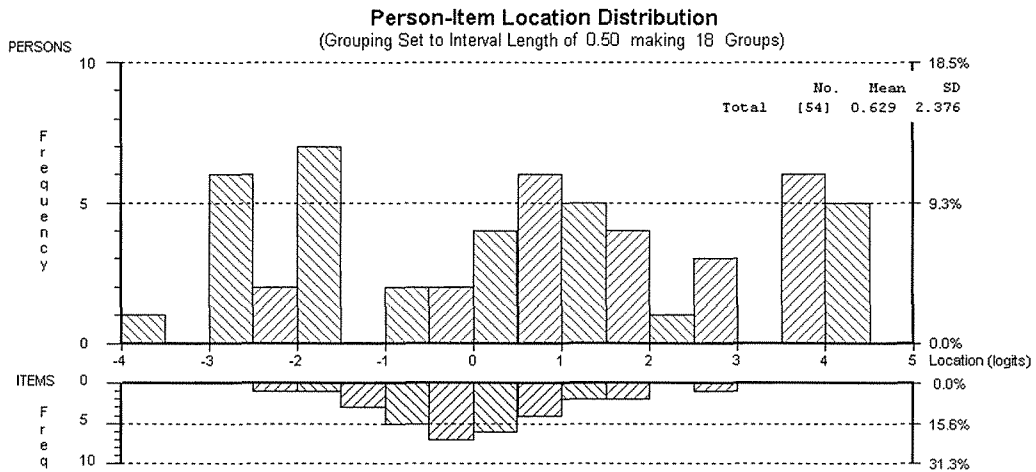


Figure 5.5 Person-item location distribution

Analysis of the individual item fit showed that no further CLOS literacy teaching practices had a large jump in chi-square values or had extreme fit residual values (see Appendix 4). However, four literacy teaching practices with border-line fit remained. Item characteristic curves for these literacy teaching practices are included in Appendix 5. These figures illustrate that Connection, Environment and Variation all under discriminated – they were observed more than expected in episodes low on the scale, and less than expected in episodes high on the scale. Structure over discriminated: it was observed less than expected in episodes low on the scale, and more than expected in episodes high on the scale. The chi-square probability of model fit improved slightly ( $p < 0.00001$ ). Considering the oversensitive Test of Fit, the inclusion of misfitting literacy teaching practices and the small sample size, this degree of model fit was considered to be fair.

An output of the model is a progress map (see Figure 5.6), which provides a picture of what it means to 'improve' or 'increase' in the possession of a trait. In this context it illustrates the location of literacy teaching practices (right of axis) and episodes (left of axis) on the same measure, providing the framework against which a teacher's Repertoire of Literacy Teaching Practices (ROLTP) can be monitored.

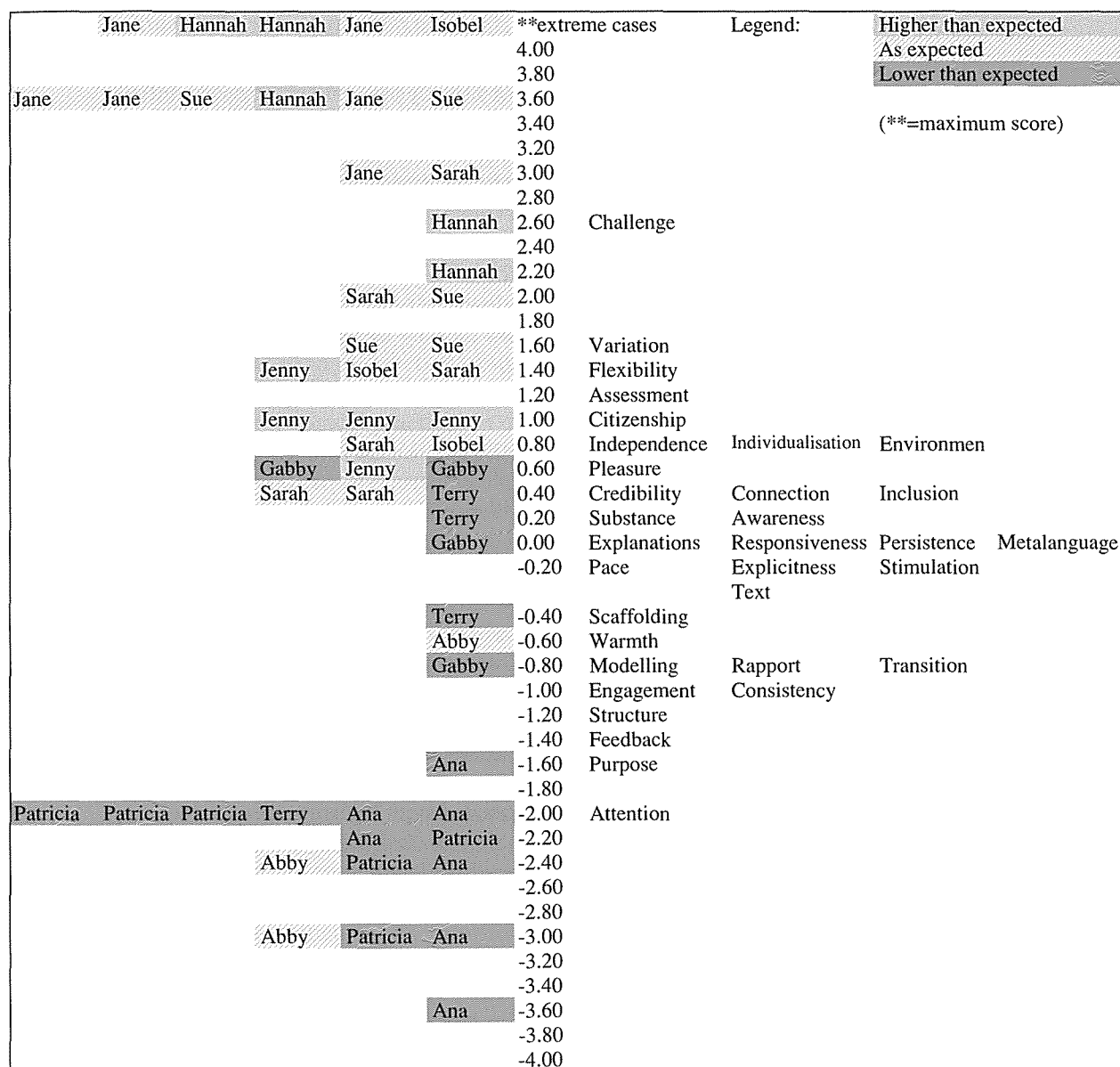


Figure 5.6 Progress map – Repertoire of Literacy Teaching Practices

All the literacy teaching practices on CLOS were observed. Most of the literacy teaching practices were located in relation to the middle range of episodes. In several episodes at the lower end of the ROLTP measure, only a few literacy teaching practices were observed. These literacy teaching practices, at the lower end of the ROLTP measure, were the more common literacy teaching practices. On the other hand, in several episodes at the higher end of the ROLTP measure most literacy teaching practices were observed. It was only in these episodes that rarely observed literacy teaching practices such as challenge were observed. These particular literacy teaching practices were at the higher end of the ROLTP measure.

On the left-hand side of the axis, episodes are colour coded according to each teacher’s student outcomes: lower than expected, as expected, or higher than expected. The episodes associated with low student outcomes are low on the scale, whereas the episodes associated with average or high student outcomes are higher on the scale. It is noted that the two teachers who team taught one group of children were located at



different places on the scale. Isobel's episodes were located at the higher end of the scale and Abby's at the lower end.

On the right hand side of the axis the distribution of literacy teaching practices and their location on the ROLTP scale can be seen. Literacy teaching practices are not noticeably grouped according to their corresponding dimension. The literacy teaching practices range from  $-2.189$  to  $2.652$  logits. Twenty-two of the 32 literacy teaching practices included had locations ranging between  $-1$  and  $+1$  logits. Challenge was noticeably the least frequently observed literacy teaching practice and was located high on the scale at  $2.652$ . Flexibility, variation and assessment were the next least frequently observed literacy teaching practices. Attention, purpose, feedback, structure and consistency were all located low on the scale, being the most common literacy teaching practices observed across all episodes.

#### **Key findings of the Rasch analysis**

The results from the Rasch analysis indicated that the data for 32 of the 33 CLOS literacy teaching practices calibrated to form a single construct: Repertoire of Literacy Teaching Practices (ROLTP). Further, all six CLOS dimensions were 'overarching' in so far as they were indicative of student achievement on *LLANS* and one dimension was neither more nor less important than another. For example, the more effective teachers did not demonstrate literacy teaching practices from any one particular dimension more than from any other dimension, but rather they consistently demonstrated literacy teaching practices from all six dimensions. Hence, a wider repertoire of literacy teaching practices from each dimension was related to teacher effectiveness.

It was also proposed that the ROLTP measure would differentiate between the literacy outcomes of children. The results confirmed that classrooms with teachers who were observed demonstrating a wider ROLTP were associated with higher student outcomes as measured by *LLANS*. In other words, it is probable that challenge was observed in episodes taught by teachers with higher than expected student outcomes, and not in those that had lower than expected student outcomes. The more effective teachers had more literacy teaching practices present in their repertoire, and in particular, more of the literacy teaching practices that ranked high on the scale. On the other hand, the teachers associated with lower student outcomes had fewer literacy teaching practices present in their repertoires and these were likely to be those literacy teaching practices low on the scale<sup>11</sup>.

The model showed that explicitness word was the worst fitting item/indicator. This may have been due to the difference in teaching strategies employed by teachers associated with high and low student outcomes. All teachers frequently displayed the explicitness word literacy teaching practice. However, it seems that the less effective teachers over-relied on this word level practice. By contrast, the more effective and effective teachers, who had a wider repertoire of literacy teaching practices, appeared to use explicitness word as only one of many literacy teaching practices, and did not over-rely on word level strategies. They worked at both text and word levels.

Four of the remaining literacy teaching practices did not discriminate well between episodes. This result may have been due to chance, exacerbated by the relatively small sample size. Smith, Linacre and Smith (2003) report that fit statistics for small samples can easily be distorted by just one unexpected response. For example, in this study poor

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<sup>11</sup> It can be seen in Figure 5.6 that the episodes featuring Isobel and Abby did not overlap. As Isobel and Abby team taught a group of children, their data were combined to form one case that was classified as *effective* based on the *LLANS* outcomes of their students. Isobel's episodes were located high on the scale while Abby's were located at the lower end.

discrimination for variation was likely to be caused by an unexpected result for Jenny. As one of the more effective teachers, Jenny was found to demonstrate variation far less than expected. This apparent anomaly might have been due to chance, but more likely to the fact that Jenny was not teaching in her usual classroom at the time of observation.

### Summary

This chapter has explored the relationship between children's literacy learning and their teachers' subsequently observed teaching behaviour. Some of the conclusions concern the statistical properties of the observational scale; other conclusions concern the substantive issues of teachers' effective literacy teaching and learning practices.

The first set of conclusions concerns the empirical adequacy of the theoretically derived CLOS schedule used to structure observation in the site study literacy classrooms. These conclusions indicate both the utility of the CLOS instrument for classroom observations of teachers' pedagogical practices in early literacy, and the stability of the Repertoire of Literacy Teaching Practices (ROLPT) measure.

In five of the six CLOS teaching practice dimensions confirmatory factor analysis indicated that there was acceptable model fit and each group of practices was shown to measure their respective CLOS dimension. The sixth dimension, support, was destabilised by one of its constituent teaching practices – explicitness word. This practice, which concerned teachers' use of explicit word and sound strategies, was present equally often in observations of teachers in the more effective, as effective and less effective than expected groups. The empirical adequacy of the literacy teaching practice scale was confirmed by the non-parametric equivalent to an analysis of variance which showed a statistically significant relationship between teachers' total overall CLOS scores and their children's earlier *LLANS literacy* scores. A very weak relationship was observed between the distribution of activities on the CLOS literacy activity axis and student performance. Finally, the Rasch analysis confirmed that 32 of the 33 CLOS literacy teaching practices (the exception being explicitness word) calibrated to form a single construct, the *Repertoire of Literacy Teaching Practices* (ROLTP).

The second set of conclusions we draw from the analysis presented in this chapter concern the relationship between the teachers' literacy teaching repertoires and their children's literacy learning. Rasch analysis supported three such conclusions about effective literacy teaching.

On the whole, the more effective and effective teachers consistently demonstrated literacy teaching practices from all six CLOS dimensions. Teachers who were observed demonstrating a wider repertoire of literacy teaching practices were associated with higher student outcomes. The more effective and effective teachers had more literacy teaching practices in their repertoires, and in particular, more of the literacy teaching practices that ranked high on the ROLTP measure. On the other hand, the teachers associated with lower student outcomes had fewer literacy teaching practices present in their repertoires, and these were likely to be those literacy teaching practices ranked low on the ROLTP measure. The activity structures of literacy teaching varied only slightly according to teacher effectiveness. Generally, the same few activity structures such as shared book, independent writing and modelled writing were widely used by all teachers regardless of their total scaled score on the CLOS instrument.



## Introduction to Chapters 6-11: The Cross-Case Analysis

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In Chapter 5 it was shown that, in terms of literacy teaching practices as measured by the CLOS observational tool, there were quantitative differences between the groups of teachers identified as *more effective*, *effective* and *less effective* on the basis of the literacy learning gains of their children as measured by the *LLANS literacy* assessments. The more effective and effective teachers demonstrated more of the CLOS literacy teaching practices than the less effective teachers in the episodes that we observed and coded. In order to investigate the hypothesis that there would also be qualitative differences between these groups of teachers in the ways in which they carried out the CLOS literacy teaching practices, we conducted cross-case analyses of the teachers in terms of each CLOS dimension, namely, *participation*, *knowledge*, *orchestration*, *support*, *differentiation* and *respect*.

In order to contextualise these cross-case analyses for the reader, the researchers who visited each classroom in the observation phase of the study have provided a brief description of each teacher, school and classroom. We have endeavoured to include sufficient detail to give a picture of each teacher, whilst at the same time maintaining confidentiality. In the case of the less effective teachers we saw it as particularly important that no details be given that could possibly be used to identify them. Accordingly, we provide fewer details of these teachers and do not report on them individually. All teachers observed for the study were teaching in government schools and all classes contained less than 25 children, the smallest being a class of eight children in a bilingual program.

**More effective teacher:** Hannah

**Class:** First year of school

**Location:** Rural

**School characteristics:** Average size, mixed SES, 15% speakers of English as an Additional Language

The school in which Hannah teaches is located in a rural town. The buildings are demountables that were trucked in 50 years ago, with the expectation that the school would be temporary. The children and the teachers have richly decorated the interior of these classrooms. The school staff, who are highly stable, active and committed, include a range of part-time specialist teachers in various areas, including ESL, education support for children with learning difficulties and those who need extension, behaviour management, counselling, drama, music and speech.

Hannah has taken advantage of many opportunities to develop her knowledge of literacy teaching through practical experiences, in-service courses and postgraduate teacher education. She has qualifications and/or experience in the areas of primary education, special education, language support and teaching English as an Additional Language. In addition, she has taken part in substantial professional development throughout her career.

Hannah has filled her classroom with colourful displays of children's work and a range of charts that give the children access to cues for their reading and writing. She is extremely well organised, with equipment always available at the point of need. The room is divided into functional spaces that support both whole and small group work. Hannah has access to a part-time teaching assistant who supports two children with

learning difficulties. It is quite evident that literacy learning has a very high priority as the room is rich with print of many genres used for a range of purposes.

Hannah's classroom is characterised by an outstanding level of classroom organization, highly effective management strategies and carefully planned classroom activities in which children are highly motivated, actively involved and demonstrate pleasure. Hannah herself is characterised by passion and pleasure in teaching, energy, sensitivity to children's learning needs and a drive to improve child outcomes. Whilst her literacy activities are similar to those used in many early years classes they are carried out artfully, with creativity and sufficient integration to make sense for the children, whilst always ensuring that there is sufficient practice in a range of contexts to ensure that skills are learned effectively.

**More effective teacher:** Jenny

**Class:** Second year of school

**Location:** Rural

**School characteristics:** Large size, mixed SES, 15% speakers of English as an Additional Language

The school in which Jenny teaches is relatively new and situated in an expanding rural town. The principal describes it as 'a good school, getting better'. It claims a teaching emphasis on the basics, as well as the six key learning areas, in addition to providing a range of extra curricular activities including; choir, public speaking, band and sporting activities. There is an Auslan signed program and a Learning Support Team identifies children with difficulties, then plans and monitors programs.

Jenny is a highly experienced and successful teacher with decades of experience, who has retained her passion for teaching. She is currently one of the deputy principals, but still knows every child in every year by name and reputation. In her role as deputy principal she is not at the time of the observational phase of the study teaching in her own classroom, but 'borrowed' the classroom of another teacher for the purposes of the project.

She is the complete, highly accomplished, classroom performer. The children hang on every word that she says and the class is frequently punctuated by bursts of laughter or gasps of incredulity at the story that she has told. Poor 'Mr X' (her partner's name) is constantly in trouble as she weaves his misdemeanours into her teaching strategies, which the children love. Her use of pitch, pace, dramatic pause and timing are expertly executed for maximum effect whatever the activity, be it shared book, handwriting, modelled writing, spelling, phonics or any other of the gamut of literacy strategies and activities she uses masterfully. An observer has the feeling that one could ask her to present a lesson on any topic and she'd be able to deliver a wonderful lesson, resulting in outstanding outcomes for the children without much preparation, due to her vast store of experience.

Her classroom management is exceptional, although we did not observe her using much groupwork. When questioned about this, she said she did use groupwork for specific tasks, particularly some reading activities, but we did not see this demonstrated and suspect that her use of groupwork would be minimal. She is able to divide her time effectively between groups working at their desks and monitoring the progress of individual children. There is a great deal of positive reinforcement of learning behaviours and achievements throughout the day.

Jenny's own metacognitive understanding of why she uses the strategies that she does and why they are effective is impressive. She is articulate and thoughtful in her responses to questions about strategies used, pedagogy and her philosophies of teaching that underpin all that she does. She clearly loves teaching early years children and they adore her.

**Effective teacher:** Sarah

**Class:** First year of school

**Location:** Outer metropolitan

**School characteristics:** Large size, mixed SES, predominantly Anglo-Australian

The school in which Sarah teaches is over 100 years old and situated in a commuter suburb of a capital city. This large school is at present the only primary school in this pleasant town of commuters, retirees and holiday makers. The school population is largely Australian-born English, with few families born overseas and has a high proportion of single parent families.

Sarah, a relatively young teacher, has been at the school for six years. She graduated with high academic achievement in both an Arts degree and Graduate Diploma of Education. The Acting Principal, literacy co-ordinator and other colleagues describe Sarah as a 'star'. She is well-liked by all staff and enjoys a warm relationship with children and parents. She was observed leading about 100 upper primary children in the hall in a modern dance to the soundtrack of *Grease* in which she was responsible for all aspects of the production, including building the set.

Sarah's classroom is filled with children's work, vibrant displays of various kinds and is well ordered. It is divided into functional spaces that are conducive to group work, which she uses to great effect. There is a teaching assistant in the classroom each morning for an autistic child who receives one-to-one attention. In terms of teaching practices this classroom is characterised by: order (everything in its place, well-trained children all of whom know what to expect); firm control that appears natural and easy (this teacher never raises her voice); carefully planned classroom activities (all lessons well-planned and interesting, with additional work always available); motivated and actively involved children; repetition; systematicity; fast pace and strong forward momentum.

In terms of teacher characteristics Sarah's passion for teaching is demonstrated in her strong belief in the importance of an effective literacy program, and literacy learning is reinforced throughout the day in all activities. She presents highly motivating, creative, well planned activities that are executed with great precision and she is sensitive to individual children's learning needs. She often uses interesting props and costumes to enhance the learning outcomes and the children participate with great enthusiasm in the activities. Sarah's donning of 'fairy wings' during group work, signifying that she is not to be disturbed as she is working intensively with one particular group, typifies her natural organisational skills and drive for improved outcomes for her children. It also shows her commitment to developing the children as independent learners able to problem solve and take responsibility for their own learning. Sarah constantly emphasises the importance of shared learning opportunities and the need for class mates to be supportive and considerate of each other.

**Effective teacher:** Jane

**Class:** First year of school

**Location:** Rural

**School characteristics:** Small size, low SES, Anglo-Australian

The school in which Jane teaches is located in a very small country town of 500 people, about three hours from a capital city. Jane has been at the school for a number of years and is approaching retirement. Within the school Jane is the literacy coordinator, first aid contact and fulfils several other roles for which she receives no time release. She was originally two-year trained but upgraded her training to a Bachelor of Education. She conveys a strong passion for teaching and the warm and respectful relationship between her and the children is clearly evident. Her classroom is packed with literacy artefacts: book stands, boxes of commercial and hand-made games, and over 200 literacy bags that she has made for children to take home as part of a supplementary reading program.

In the observation phase of the study, towards the end of the year, it is clear that class routines have been firmly established. The day begins with children quietly collecting their individual blackboards and sitting down to copy the 'word of the day' from the blackboard. Jane uses a different word each day as her theme for word study activities. Her attention to the children is constant and she addresses individual needs throughout the literacy session.

This classroom is never silent and this teacher is never still. There is not a wasted learning moment as transitions are fast and productive and group work rotations are carefully timed so that all children complete four activities by the end of the literacy session. During the group activities Jane hears every child read individually every day. She involves parents in literacy teaching in various ways, which include showing them how to assist in a four-stage writing process and the extensive home reading program.

Jane teaches a state early years literacy program. Each literacy lesson normally includes shared book, modelled, shared and individual writing, spelling, and group work in which children practise literacy skills and concepts that have been taught. She supplements the program with a great deal of her own material that she has written and developed over many years. She emphasises literacy throughout the day, not just in the designated literacy time. She sets high standards for the children who respond positively to the pace and challenge and become very excited about their learning. For example, two children who are independently reading a text of their own choice find 'talking marks' which have been a focus of the lesson, and come running spontaneously to show their teacher. A notable feature of this classroom is that children are eager to discuss their literacy learning at every opportunity.

It appears that the *LLANS* data for Jane's sample of ten children was skewed by two children who had been absent from school for most of the period between the beginning and end of year assessments, and so had not been taught by Jane during this time. Apart from these two children who showed no literacy progress, all children assessed in this class demonstrated large literacy gains on the *LLANS* assessments.

**Effective teacher:** Sue

**Class:** Second year of school

**Location:** Capital city metropolitan

**School characteristics:** Large size, mixed SES, predominantly Anglo-Australian

The school in which Sue teaches is located in a capital city. The school was opened 90 years ago as a one-teacher school but is now large, spacious, well-appointed and the largest primary school in the state. It has a stable staff and a variety of specialists in areas that include physical education, music, library, drama, early years literacy and special education/early intervention. It has recently built a new library complex which is an excellent facility. There is a particular focus on improving literacy, numeracy and information literacy, with an emphasis on developing higher levels of thinking for inquiry and reflection.

Sue has been teaching for many years and is still very enthusiastic about her chosen profession. She was originally two-year trained but upgraded her training to a Bachelor of Education. She works collaboratively with the teacher in the neighbouring classroom, making the most of opportunities to share teaching ideas and programs.

Her classroom is spacious, which makes it very congenial for the children to work in groups and she has used this space to promote many aspects of literacy in different contexts. There is a dedicated 'author of the week' section where she displays a selection of books and a profile of the author, and children are actively encouraged to access this space throughout the day. A colourful variety of children's work is always on display as well as various books, games and teaching charts. Her integrated programs are a strength and allow her to reinforce literacy concepts throughout the day.

The classroom is characterised by: carefully planned classroom activities; children who are motivated and actively involved; literacy activities that are interesting and integrated (often planned was around a theme or book); and pacing and momentum. A strong spelling program is reinforced in all lessons through the use of spelling journals and other strategies that are constantly referred to in most activities. Children are continually encouraged to take responsibility for their own learning as well as to be supportive and consider the needs of all class members.

Sue is characterised by her passion for teaching and strong relationships with all of the children in the class. It is a vibrant and happy classroom with a strong emphasis on encouraging a love of learning.

**Effective teachers:** Isobel and Abby

**Class:** First, second and third year of school

**Location:** Outer city suburb

**School characteristics:** Small size, low SES, over 50% speakers of English as an Additional Language

The small school in which Isobel and Abby teach is situated in an old suburb of a large capital city. Their class, like all the others in the school, is made up of children from a variety of age-groups, in their case first, second and third years of school. The reason for this is mainly organizational in that, with decreasing numbers of children in the school, there are insufficient numbers to allow for single year classes. The school has access to a number of specialists, including ESL and early intervention. Particular features of this



school are the varied ethnic and linguistic mix of children and enthusiastic and energetic staff, particularly the principal and the highly skilled and enthusiastic early years literacy co-ordinator, who is also the regional co-ordinator of literacy specialists and conducts on-going professional development for the teachers in the school.

Isobel and Abby are young and enthusiastic recently qualified teachers, Isobel being in her fourth year of teaching and Abby in her third. With strong guidance from the literacy co-ordinator, they team-teach a group of children from various ethnic and linguistic backgrounds, adhering strongly to the state early years literacy strategy. They provide a rich literacy environment, have a strong focus on literacy and a press to reach set literacy targets, that includes regular assessment of children by running records. The classroom is well-ordered, particularly in regard to highly predictable routines and the organisation of materials and children by the task management board. There is a combination of specific literacy teaching in whole group and small groups, small group games, modelled, shared, guided and independent reading and writing, and sharing. Both teachers have excellent relationships with the children, seem well aware of the individual needs of their children and were observed to manage some difficult situations with a positive attitude.

The teachers have access to a highly skilled and committed teaching assistant who is employed to facilitate the integration of a special needs child into mainstream schooling. This assistant has attended many professional development programs, including use of technology and is on hand to help children individually with computer use for writing stories and software packages. This was the only classroom in the study in which computer use was observed in the literacy classroom, although it did not appear in the coded episodes.

**Less effective teachers:** Patricia, Gabby, Terry, Ana

**Classes:** First year of school; First year of school; First year of school; First year of school predominantly with some second year of school children

**Locations:** Rural city; Rural city; Rural city; Inner capital city

**School sizes:** Average; Large; Large; Small

**Socio-economic features:** Low SES; Low SES; Low SES; Low SES

**Linguistic and cultural features:** Mostly Anglo-Australian with some Indigenous children; Ethnically and linguistically diverse; Mostly Anglo-Australian with some Indigenous children; Predominantly speakers of English as an Additional Language

The less effective teachers differ from each other in a number of ways. In terms of teaching experience they vary from a young, enthusiastic, recently qualified teacher who is in the process of developing her classroom skills and content specific knowledge, to a bilingual teacher who has little experience of teaching young children in the Australian context, to two experienced teachers both of whom have returned to teaching after long career breaks.

The literacy environment of these teachers' classrooms also varies. One has a very rich environment: a lot of children's work decorates the walls, which is lively, colourful and up-to-date and there are commercially and teacher-made charts that include the alphabet, blends and numbers. The literacy environment of another of these classrooms is confined to explicit instructions about behaviour, procedural information on writing different genres and graphophonic lists, with only a small amount of children's work on display. The two other classrooms demonstrate a mix of resources which are not generally used in teaching. Whilst the recently qualified teacher shows great enthusiasm

for teaching and her children are usually engaged in learning, the other three less effective teachers do not demonstrate a passion for teaching, nor are their children engaged in learning, although two of these teachers' classrooms are characterised by passive attention to literacy tasks. In one teacher's class there is little attention or engagement.

All but one of these teachers have access to a literacy coordinator/specialist, all four make use of their state literacy strategy to some degree, one also uses a commercial phonics program and one makes extensive use of printed worksheets. All classrooms make some use of shared book, modelled, shared and independent writing, group work and phonics activities. The amount of explicit instruction in literacy varies: in one classroom children spend most of their time in individual or small group activities; in one most of the time is spent in teacher-directed activities; in the two other classrooms there is a mix of teacher directed and small group activities. However, what is common to these four classrooms is that explanations of literacy concepts and skills are not clear and do not appear to facilitate the children's learning. It appears that the less effective teachers do not have a clear understanding of the nature of English literacy and/or how to teach it to young children.



## Chapter 6: Participation

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It has been long recognised that one's motivation and desire to participate actively in learning is a critical element for learning to occur. In the Classroom Literacy Observation Schedule (CLOS) the dimension that is called 'participation' encompasses a group of teaching practices that are mainly concerned with the teacher's ability to motivate a child's desire to participate actively in learning. One of the major qualities we observed in the classrooms of effective teachers was their ability to encourage, require and facilitate children's active participation in learning. Participation is broadly defined as the active involvement of children in learning. Wood, Bruner and Ross (1976) argue that such participation, or as they refer to it, 'maintaining the pursuit of the goal', is critical to engagement and learning. This is achieved through the motivation of the child and the support of his/her learning activities. While the aim of effective teachers has always been to encourage intrinsic motivation, the encouragement of the learner's participation requires active efforts by the teacher to ensure that children are focused on learning. Hence, while teachers encourage active participation in the presence or absence of motivation, this important teaching practice is even more critical in the absence of intrinsic motivation and enthusiasm for self directed learning. Five teaching practices are identified within the participation dimension: 'attention', 'engagement', 'stimulation', 'pleasure' and 'consistency' (see Table 6.1).

Table 6.1 CLOS Teaching Practices: Participation

Attention	Almost all children are focused on literacy learning
Engagement	Children are deeply absorbed in the literacy lesson/task
Stimulation	The teacher motivates interest in literacy tasks, concepts and learning
Pleasure	The teacher creates an enthusiastic and energetic literacy classroom
Consistency	Strong literacy routines are recognised and understood by the children

Attention involves the teacher actively inviting the child to participate in classroom learning and is often prompted by questions, for example, 'Would you like to read this?' As well it is sometimes demonstrated in simple directions to continue in the pursuit of the task, or prompts to keep on working. The work of Bruner (1990), Vygotsky (1978), Rogoff (1990) and others has helped us to understand the importance of engagement, the second teaching practice in the participation dimension. This involves the teacher offering praise or encouragement, giving simple instructions and directing attention in order to encourage the pursuit of the goal of learning. Stimulation involves teachers more explicitly attempting to inspire by offering helpful background knowledge, reminding children of the goal of the activity, or pointing to various intrinsic benefits of the task at hand. Demonstration of pleasure in learning, the fourth teaching practice in the participation dimension, was another way in which teachers gained the participation of children. This was achieved by expressing personal pleasure in the topic or activity that was being pursued, or pointing to the enjoyment, pleasure or reward being experienced by others in pursuing the goal. Consistency is the fifth teaching practice associated with the dimension. This can be demonstrated in the ways in which teachers invite involvement in lessons, in the way that tasks are constructed, or in demonstrating predictability in the routine ways in which learning is framed and encouraged, and in the routine ways in which children participate in class activities. It involves the teacher creating a learning environment where children understand and apply the classroom's conventions and rituals that operate to maximise learning.

Almost all teachers in this study gained the participation of children in literacy tasks and activities. A simple descriptive analysis, by frequency, of each of the participation dimension teaching practices in the classrooms visited and videotaped provides a

summary of the proportion of episodes that the researchers coded for attention, engagement, stimulation, pleasure and consistency and shows the variation across the classrooms (see Figure 6.1). All of the participation teaching practices were observed in all coded episodes in the classrooms of the more effective and one of the effective teachers. These teachers appeared to spend more effort seeking and gaining children's participation in classroom learning, and used more sophisticated forms of each teaching practice.

The classrooms of the less effective teachers were generally characterised by a lack of pleasure and two of them were also characterised by a lack of engagement and stimulation. It can be seen though, that for the participation dimension, the less effective teachers as a group varied in their teaching practices. One had a similar profile to that of the effective teachers, with high levels of all practices apart from pleasure and another showed high levels of consistency and children's attention. The levels of participation in the teachers' classes are discussed below, and illustrated with selections from transcripts of the video cases.

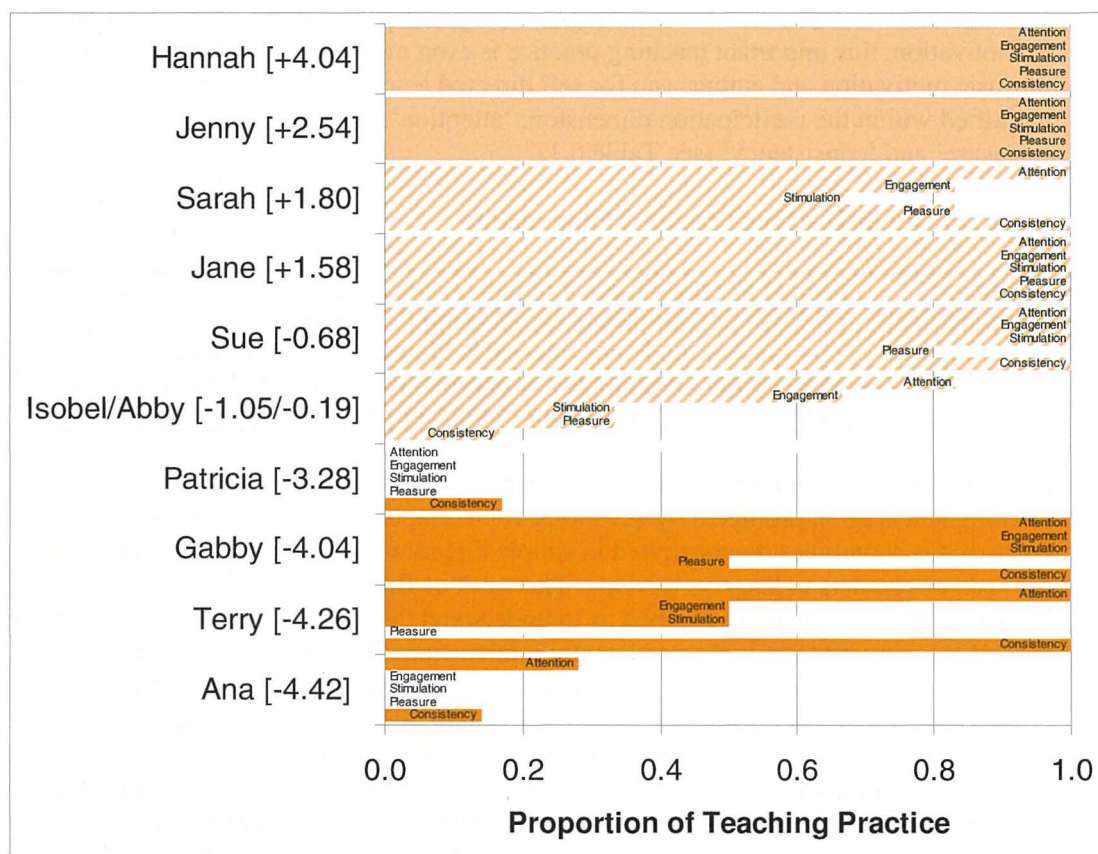


Figure 6.1 Proportion of teaching practices present in episodes, by teacher, for the participation dimension of CLOS<sup>12</sup>

**Attention**

Attention is a critical element in literacy learning (Samuels, Schermer & Reinking, 1992). There is large body of research showing a strong relationship between inattentiveness in the classroom and low academic achievement (Rowe & Rowe, 1999;

<sup>12</sup> Figures in parentheses indicate the children's learning gain adjusted residual in standard deviation units for each teacher's classroom

Barkley, 1998; Hinshaw, 1994). In a study of teacher effectiveness Wray *et al.* (2000) found that effective teachers of literacy regularly refocused children's attention on assigned tasks.

The teachers in our study frequently monitored whether children were watching, listening and taking part in learning activities. Gaining and maintaining children's attention was the most frequently observed teaching practice within the participation dimension, with children in the majority of classes demonstrating attention in all episodes. A variety of strategies was used by teachers to gain and maintain attention and the most common tool used was their voices (see Table 6.2).

Table 6.2 Ways in which teachers used their voice to gain and maintain attention

Strategy	Example
Asking rhetorical questions	'Right, who's started?'
Directing questions meant for the whole class to a specific child	'Talia's ready to write.'
Questions asked to direct attention to one aspect of the learning task	'What do you think the word <i>vast</i> means?'
Focusing on aspects of text and language	'Is it a capital or small letter?'
Requiring a posture that maximises attention	'Can I see everyone's eyes? I want to see beautiful whole body listening.'

The more effective and effective teachers used many strategies in quick succession and carefully targeted them to specific children. In the following episode Hannah, a more effective teacher, made use of many variations in the ways she sought the participation of the class, the group, and individuals whose attention needed refocusing. She began by addressing the whole class, making clear her assumption that every class member would make an attempt at the task, 'We're going to have a go'. Non-participation was not an option. Hannah again signalled the start of the activity, 'Are we ready?' She sought answers from individuals, she prompted Lourie to listen and ensured that all children responded in unison.

- T: Now we're going to have a go at writing a word. Are we ready? When I say the sound /qu/, how many letters are we going to write for that one sound? Jack.
- T: Two.
- SS: Two letters because we write *Q* and *U* to make the sound /qu/.
- SN: /qu/.
- T: /qu/.
- SS: Here's the first word, are we ready?
- T: Yes.
- SN: Lourie, are you listening?... /qu/ /i/ /t/. *Quit*.
- T: *Quit*. /qu/ /i/ /t/.
- SN: So you're going to have, how many letters altogether?
- T: Four.
- SN: Four. But remember that first sound is made up of two letters: /qu/ /i/ /t/.
- T: *Quit*.  
Sam, have you written it or are you just talking? *Quit*. Keep going.
- [B1P2\_0:09:58]

Similarly, the following episode from Sarah, an effective teacher, shows how she moved from one strategy to the next, focusing the attention of individuals and providing direct prompts. In this example, the teacher began by gaining the attention of the whole group, gave a quick (and direct) instruction to Adam to 'sit down' and then directed questions to individual children as they prepared to read. This complete interaction was designed

to gain the focus and attention of the group as they commenced reading. In this case, the strategy was related to the teaching practice of engagement as, ensuring that she had the attention of all the children increased the probability (but did not ensure) that they were engaged in the task.

- T: Fantastic, are you ready for it to work? What's the title of the story? // *Jack and the Beanstalk*.
- E: // *Jack and the Beanstalk*.
- T: Fantastic, and the author is Judith Smith. Sit down please, Adam.
- NS: And the illustrator.
- T: And the illustrator is Heather Billport. What does the illustrator do? Carol?
- NS: Writes the book.
- T: Have a think, the illustrator. Nina.
- NS: Um, draws the pictures.
- T: Draws the pictures, good girl. Who's the person, Carol that writes the book?
- NS: The author.
- T: Good girl, well done, that's the author. Let's have a look. *Jack and the Beanstalk*, this is listening time.
- T: Long ago, in a faraway land, lived a widow and her son Jack. They had no money. They only had a cow.
- [H3P2\_0:03:56]

The above examples show the effective use of language to control behaviour, shape activity, define the task and stress what is important for learning to occur. The teachers' activity involves constantly shifting focus from the group to the individual and back to the group again, monitoring each child's participation in learning and ensuring that they are attending. Our observations of the more effective and effective teachers confirm the findings of researchers like Stubbs (1983) and Cazden (1988) that indicate that much of a teacher's language is directed at control of the classroom. Stubbs (1983), for example, found that in secondary classrooms in Scotland attracting attention, controlling speech, checking or confirming understanding, summarizing, defining, editing, correcting and specifying a topic were common teacher practices designed to control child behaviour. Our case study data suggest that the teachers used a wide range of strategies to maintain child focus and attention.

### **Engagement**

In meta-analyses of research studies (Hattie, 2003) and other large scale studies (for example DfEE, 2000) engagement has been found to be a key characteristic of the classrooms of effective teachers. In such studies engagement has been related to the teacher's ability to motivate children and use a variety of teaching strategies. Engagement may also be seen as related to attention in that both involve keeping children on task, but for engagement the aim is to ensure that children are deeply absorbed in the activity. While gaining attention might involve little more than compliance, engagement involves the child seeing the relevance of the task and wanting to learn. In the case of literacy teaching it also means deep engagement in attempting to construct meaning as part of the task.

In the classrooms of two of the less effective teachers, we did not observe the teachers seeking to engage children. All other teachers in this study attempted to move their classes beyond the attentive state. These teachers focused attention so that children could have maximum opportunity to gain from the planned activity. At times this simply involved building a bridge between a child's prior knowledge and the content of a task, for example, a text to be read. The following episode was part of a shared book session in Hannah's classroom and illustrates how effective teachers orchestrate this process of seeking child engagement in the story by drawing the children's attention to key

concepts, offering additional information, and all the time seeking contributions from individuals.

- T: Okay. Hands off your heads and turn and face me. I hope that's not a normal [inaudible]. Turn around, David, and look at me. That's the boy. Who had an answer? Why was - why wasn't the Sad Little Monster sad anymore? Who can tell me what changed him? Shaun?
- SN: The, the princess came along.
- T: The princess came along. What else? Steve?
- SN: [inaudible]
- T: Yes. What else? What do you think changed him around? Michael?
- SN: They were smiling.
- T: Who were smiling?
- S: The Queen.
- T: The Queen, the Queen started smiling at him. And I think it started making him feel really good.
- [B7P9\_0:20:10]

As the transcript demonstrates, the teacher attempted to prompt children to explore meaning, 'Why wasn't the Sad Little Monster sad anymore?', and 'What changed him?'. This example shows how Sarah scaffolded the learning using a variety of strategies such as questioning to encourage deeper engagement with the text.

Similarly, an episode from the classroom of Sue, an effective teacher, demonstrated how she gently coaxed children to consider other possibilities and move beyond their initial observation that the turtle's shell was simply 'off its back' and to consider how the observation that he dragged his shell behind him (rather than getting into it), was linked to the deeper theme that the turtle was afraid of the dark. What is impressive about this exchange is that the teacher didn't simply tell the class, but rather tried to get the children to build on each others' understandings until the theme became clearer.

- T: You're listening, mate. *Button, buttons*. But Franklin was afraid of small dark places and that was a problem because...Franklin was a turtle. He was afraid of crawling into his small dark shell and so Franklin the turtle dragged his shell behind him. What's the interesting thing about the shell though?
- SN: [inaudible] like a dog.
- T: No, you're calling out. What do we do? Yep. And Ken was first.
- SN: [inaudible]
- T: What's interesting about the shell? I know it's off his back, but there's something else interesting. No, give him time.
- S: [inaudible] that yellow stuff under it - on top of it [inaudible].
- T: So is this the top?
- S: Yeah - no [inaudible].
- T: So what's interesting about his shell? He's dragging it...
- S: Upside down, upside down.
- T: Ken's got it!
- S: Upside down.
- T: Upside down. It's upside down. But that's the easiest way to hook the rope through, I reckon. Okay? Off we go. Every night Franklin's mother would take a flashlight and shine it into his shell. "*See?*" she would say, "*There's nothing to be afraid of.*"
- [J9P9\_1:17:33]

At other times the more effective and effective teachers carefully ensured that children attended to key aspects of language, thus reducing cognitive load caused by the need for



excessive decoding, unknown vocabulary and so on. This much more careful structuring of the learning environment and the teacher's intervention at key points in the learning cycle is part of what Wood, Bruner and Ross (1976) call 'scaffolding'. This, in turn, is a term devised to explain the process Vygotsky (1978) observed where learning is facilitated as children are supported in efforts to engage in tasks that are just beyond their actual level of development. Hence, in seeking to heighten learner engagement, the teacher controls the focus of attention, demonstrates the task, segments the learning task, and so on (Cairney, 1995). The aim in using this strategy is to help children learn from text while learning something about language.

Jenny, a more effective teacher, focused attention on key aspects of phonemic awareness as a reading group tried to sound out a word that was unknown. In the process she didn't just teach an unknown word, she provided a decoding strategy to direct the children's engagement as they read – an important technique which they could use when encountering new words in the future.

- T: Yeah, we'll get to the whole sentence. Don't panic, Carl. But I need another /g/ word. Ah, let me see. Robert?
- SN: *Giraffe.*
- T: /gir/ giraffe?
- S: [inaudible]
- SN: [inaudible]
- Ss: [inaudible].
- T: Oh, /j/, /j/, /j/.
- SN: That's J.
- T: Ah.
- SN: [inaudible]
- SN: It's G.
- T: Are you sure?
- Ss: Yes.
- T: Are you ... really sure?
- Ss: Yes.
- T: So you're telling me that the word *giraffe*, but I hear a /j/ sound, not a /g/ sound.
- SN: Sometimes /g/ makes a /j/ sound.
- T: Alright, who can have a go at spelling or sounding out that word *giraffe*? Do you know? Carl?
- SN: *G R F.*
- T: I tell you what; you've done a jolly good job. You've done a very good job. Something's missing in there.
- [C6P9\_0:23:59]

What each of these transcripts shows is the diverse and skilful ways in which these more effective and effective teachers used language to engage children in learning. Language wasn't simply used to provide information, or direct attention. Rather, there was an attempt by these teachers to orchestrate behaviour and attention so that children might gain more from their pursuit of the task.

### Stimulation

Stimulation is the label we have given to the teaching practice used by teachers to motivate interest in literacy tasks, literacy and language concepts and understandings, meaning making and learning in general. Motivation has been seen as important for learning (Hattie, 2003) and Snow, Burns and Griffin (1998) see it as crucial for making adequate progress in learning to read. They point out that most children begin school with positive attitudes towards school learning, but that if children are not stimulated

and their motivation maintained they may become alienated, a risk factor for the development of learning difficulties.

Stimulation was a common practice within teachers' repertoires: it was observed consistently in the classrooms of all but one of the effective and more effective teachers and in one of the less effective teachers' classrooms. As can be seen in Table 6.3 the form of stimulation varied.

Table 6.3 Examples of Teachers' repertoire: Stimulation

Form of stimulation	Example
Teacher comments as positive feedback and praise designed to encourage pursuit of the task	'Good boy. And another one...Excellent.'
Encouragement to share successes with others	'Nice, quiet work. Wonderful, people! It's nice to see you're thinking. You can share your work later with friends.'
Encouragement to continue with learning	'I don't want you to stop thinking. I want you to think more.'
Encouragement to strive for high standards	'Try one more here. See if you can make it just perfect.'

When these teachers were aware that a specific child or a whole group was in need of stimulation they worked hard to motivate and maintain the children's interest. Often this meant that the teacher was moving back and forward from one person to another, commenting on various things, encouraging the children to pursue the learning task with enthusiasm, as can be seen in the following transcript from the classroom of Jane, an effective teacher.

- T: Chris, slow down and speak a little quieter. Fullstop after car, please. Yes, motor /b/ /ike/. /b/ /ike/ is like, it's like the word *like*. *Bike* and *like* are rhyming words. It's easy to work out. Sarah, I haven't had a look.
- SN: I need help with *gypsy*.
- T: I've done *gypsy*. Sitting nicely. Pull your chair in, please. I can't get by.
- Ss: [inaudible]
- T: It is what, Tyler?
- SN: Going fast.
- T: It is going fast. Could you help him with *going*?
- SN: /g/, G [inaudible].
- SN: One //car.
- T: //Car.
- T: Fullstop. *Cars*.
- S: [inaudible]
- T: Machines. Fullstop. *They*... how do you spell *they*? It has to have *the* in it.
- Ss: [inaudible]
- T: That's right. They can carry things like...
- SN: [inaudible]
- T: Yep and lollies and...
- S: Presents...
- T: Presents and... good. Sit on your bottom.
- SN: [inaudible]
- T: You are very loud today!
- SN: How do you write bike?
- Ss: [Inaudible]
- T: [Inaudible] You did well with *motor*. *Bike* is part of *like*. // /ike/ and /b/ /ike/. You can draw your motorbike now, but what belongs at the end of the sentence?

[I14P28\_0:44:20]

What is impressive about this extract from Jane's lesson is the pace with which she moved the task along, monitored the work of many children, and provided carefully chosen comments to stimulate forward momentum for children as they engaged with this writing task.

Stimulation can take many forms. In the episode that follows Jenny stimulated interest by co-constructing meaning with the children. In this example of a pre-writing task, she generated an animated discussion by building suspense through trying to get the children to guess the terminology for the type of shoes she was going to use in her text. The children's enthusiastic responses showed their willingness to join in with the game, thus becoming fully engaged in the task.

- T: Another pair of shoes? I've got a beauty! I'm not going to tell you until the end. What would you put on him, Belinda?
- SN: Joggers.
- T: Joggers!
- Ss: [laughter]
- T: Would we make them Nikes or Reeboks?
- SN: Reeboks.
- T: [laughter]. I'll put joggers, and what could he do, Belinda, with his joggers? Pardon?
- T: *Romp and stomp.*
- S: [inaudible]
- T: *Romp and stomp.* One more. Adam.
- SN: Sneakers.
- T: Sneakers.
- SN: Oh, the same as *joggers*.
- T: Another word for *joggers*. Could I put *sneakers* here? Could we share those?
- SN: [inaudible]
- T: May I tell you my idea?
- Ss: Ballet shoes!
- T: I think I would give the giant...
- SN: //Ballet shoes.
- SN: Ballet shoes.
- T: Stand up, Erin.
- SN: That was your one.
- Ss: [laughter]
- T: Pardon?
- SN: Ballet shoes. [laughter]
- T: Did you read my mind or something? Well I think you did because that was my suggestion. *Ballet shoes*. Sit down. *Ballet shoes* I was thinking.
- Ss: [laughter]
- [C15P28\_0:31:25]

Sue used a different approach again in trying to stimulate interest in a task. She directed the children's attention to other resources in the room, commended their efforts, and provided positive support for their efforts as she scaffolded their attempts to complete the task. Comments like, 'It's nice to see you getting your own thoughts down' and, 'See? You're thinking' show how the teacher valued individual effort and intellectual engagement. Once again, the aim in making these comments was to motivate interest in learning.

What our study shows is that the effective and more effective teachers were observed using stimulation as an important strategy. In the classrooms where children's work was

not monitored with the same urgent interest and children were not stimulated to maintain motivation, then attention was reduced and engagement with the task was limited.

### Pleasure

An important component of effective early literacy instruction within the participation dimension is pleasure. This teaching practice has been termed 'the classroom fun factor' (Scheerens & Bosker, 1997, p. 124) which is an off-shoot of good classroom relationships and satisfaction, and is closely related to warmth, empathy and rapport with children. It was evident when a teacher increased child participation in learning by creating an energetic and exciting classroom. Overall, pleasure was less frequently observed than the other teaching practices in the participation dimension: it was observed consistently only in the classrooms of the more effective teachers and one of the less effective teachers. The ways in which pleasure was demonstrated and stimulated varied from episode to episode but a number of common forms were evident. This sometimes took the form of the teacher expressing personal pleasure in the learning task, for example:

- T: A couple of tricks. Oh let me see. [laughter] No I don't have, ah! Here they are! A couple of tricks...up my...
- E: [laughter]
- SN: I saw that [inaudible].
- T: A couple of tricks in the cards...a couple of tricks in the cards to make it just a little bit more interesting. And the first thing I'd like is to go through and have a, say the sounds of the letters. Not the names. The sounds. What's the matter, Leo?
- SN: [inaudible]
- T: Yeah, it'll be right. If not we'll wash it later. Okey dokey. The sounds that these letters make. Be very careful. Remember, a tick for all the groups or twenty-eight servants for me. Oh, that's too hard to start with. [inaudible]
- SN: That was alright!
- T: Oh I don't want, I don't want to start with the hard stuff yet! Oh, too hard!
- SN: I can see it.
- T: Oh alright, we'll start with an easy one. You'll probably get this one. The sound everyone. What is it?
- E: /u/.
- T: Oh that...See? I told you that was an easy one! You got that one. Okay, your knee.
- [C17P23\_0:42:45]

In interactions such as the example from Jenny's class above, what is obvious is the enjoyment that the teacher generates as she engages with the children and helps them to learn. This was demonstrated in the teacher's intonation, pacing and warmth of response. Such enthusiasm is usually contagious and in turn leads to children expressing their enjoyment and pleasure in a task.

Another way in which pleasure was used to stimulate participation in learning was anticipation of the pleasure that children were to experience. Some teachers aroused this anticipation by engendering the expectation that each learning task was special and had been created especially for the children in her class. This served as an encouragement for the children to participate enthusiastically in learning. For example, in the following episode Sarah emphasised the appealing nature of the materials for the 'pop-up' task that was to be undertaken.

- T: Red stars today, you get to do a special pop-up card about *Jack and the Beanstalk*, and I'll leave the book up here so that you can have a look if you want to. On the front cover I'd like you to write the title of the story, *Jack and the Beanstalk*, Mrs J did a beautiful job with that, didn't she? When you open it up, you can have a go at drawing any part of the book in there. Mrs J drew the cow, she must have liked the part with the cow, and she had a go at writing a sentence. The cow was sold for magic beans. So I'd like you to choose your favourite part of the story. You can put one of the characters on the pop-up bit, and then you can write me one sentence to go with the picture.

[H21P23\_0:17:12]

At times the teachers also expressed pleasure in children's work that in itself encouraged further participation in literacy learning. In the following episode Sue, an effective teacher, is fulsome in her praise of a child's work, in effect encouraging the child to sustain this level of effort.

- T: Yes, dear. Good girl! Yay! Terrific! Okay, what would you like to do now?  
S: Drawing.  
T: Would you, would you... What are you going to finish it with if you're going to start a drawing?  
S: [inaudible]  
T: Yes. Have you done some proofreading?  
S: [inaudible]  
T: I don't, I think it's wonderful! I don't think it needs proofreading. I think it's beautiful! I'm really proud of your work! Right, darling, you can go and get a plain piece of paper. Leave that there so you know what you're drawing, and go and get yourself some paper for drawing. Right. How are we going here?

[J18P23\_0:32:39]

What each of the above examples illustrates is how the teacher fosters participation in learning by engendering pleasure in a variety of forms in order to encourage children to sustain their efforts and keep on task.

### **Consistency**

Consistency involves the setting of specific routines by the teacher that are understood and adhered to by the children. Whilst this may be an important factor in classrooms in general, the establishment of routines is particularly important in the early years of school (Brophy & Good, 1986). Hill *et al.* (1998) have pointed out that in the early school years children are required to learn the routines of the classroom such as managing their own time, space, resources and bodies in terms of school expectations of behaviour.

This practice was evident when teachers invited involvement in lessons, structured tasks, or demonstrated predictability in the way learning was framed and encouraged. It was the only teaching practice in the participation dimension observed in every classroom, but there was some variation in its frequency of use across classrooms. All but one of the more effective and effective teachers were observed building consistency and predictability into their classroom environments in all observed episodes. These teachers' classrooms ran smoothly and were highly predictable. In contrast, two of the less effective teachers struggled in this area and some of their activities seemed somewhat chaotic and unplanned.

At times this consistency was demonstrated in common procedures and routines that enabled children to confidently embark on learning activities. In the following episode, the child's response indicated that the class had a well established routine for

proofreading their writing and that this routine had been well practised and reinforced by their teacher, Sue.

- T: /i/. We don't ever write just a little /i/ in the middle of nowhere. We always use a capital. What else do we do when we're proofreading? We've gone through fullstops and capitals. Ah, Amber?
- SN: Underline the words [inaudible].
- T: Underline the words that we, we would like help fixing. Okay. We'll underline those in red and I will help you correct them when we conference, don't we? Joe?
- [J20P7\_0:00:36]

Another common example of routinised strategies for gaining children's attention and redirecting their activities was the use of clapping or other physical signals. In the following episode Sue began to clap her hands, a routine signal for the children to clap in time and redirect their attention to her.

- T: [claps a rhythm]
- E: [children copy the clapping rhythm]
- T: [claps another rhythm]
- E: [children copy the new clapping rhythm]
- T: Should have everybody's eyes this way. Now you've had your one minute. Have you finished, the inside people?
- [J21P7\_0:12:28]

Having a predictable environment and stressing the importance of compliance with class routines encouraged appropriate behaviour. For example, in the following episode Sarah involved the children in the routine for taking the class mascot home overnight. This routine was the catalyst for the next morning's language activities that included the daily newstelling activity. In taking the bear home the children agreed to accept the consistent routine that was always used.

- T: Straight away! Didn't even have a practice first so that was fantastic! Good girl! Would you like to see who's going to take him home tonight?
- S: Mm.
- T: Cross everything. Who's it going to... ooh, Brian's crossing his fingers!
- SS: [inaudible]
- S: Oops, goodness me! Will!
- T: Will's turn! Ah, see that's because he was crossing his legs. You were crossing your legs and arms, good boy! Give him a clap! Well done, Will!
- T: I can't wait to see what you do with him tomorrow.
- [H27P7\_0:02:41]

Most of the more effective and effective teachers used structured ways for rewarding appropriate behaviour, good work and participation in class activities. In the following episode Sarah was using a system of ticks on the board to note appropriate behaviour.

- T: Oh, I'll tell you what, those gold stars are working so quietly, I'm going let them all have two ticks each, what beautiful concentrating. Thank you for not disturbing your friends. Yes, Carol?
- SN: Um, Does this mean I'll get four ticks?
- T: You will get four ticks! Good thinking!
- SN: We've already got our stars if we get two ticks.
- T: Well, we'll have to see, Jack. We'll have to wait and see.
- [H26P7\_0:42:29]

On other occasions the teacher reminded children of common literacy strategies in order to make the task easier for them and to maximise their participation in the task. A common area for application of this form of consistency was in word recognition. In the following episode Jenny demonstrated how consistent routines used for decoding words were helpful, and in the process maintained participation in the reading activity.

- T: Still. Eyes this way; not fussing. That's what I call a good learner. Harry could I have my green book there, please? Here he is. This is *The Giant of Ginger Hill*.
- SN: [inaudible]
- T: Have a look at that word *giant* and *ginger*.
- SN: [inaudible]
- T: *Giant* and *ginger*. What did we have? Erin? I saw the little lights go on! What sound's it making?
- SN: /g/.
- T: /j/. What sound is there?
- S: /j/.
- T: The /g/ sound. But it's making that /j/ sound we had. The same as in *giraffe*. Be very careful about that one.
- SN: It's got the /i/ in the word there. The /i/...
- T: Ah! Oh! The short vowel?
- SN: The short vowel is in both of them.
- T: We're going to leave short vowels now. I want you to imagine what sort of giant this could be.

[C24P7\_0:13:53]

### Summary

Analysis of the participation dimension of CLOS indicates that all teachers used some strategies for gaining child participation in learning. It also shows that some practices such as engagement were observed less often and when they were observed were generally associated with the teachers identified as effective or more effective. The effective and more effective teachers gained strong child participation in learning activities, established significant relationships with their children, and actively sought to use language to encourage participation. Our data suggest that effective teachers use a diverse range of practices that are well orchestrated to engender interest in and commitment to learning, founded on close personal relationships with children and knowledge of their ongoing needs as learners.

In specific terms, the classrooms of the more effective and effective teachers were characterised by the ways in which these teachers used their voices and body language to gain and maintain attention as they controlled behaviour, shaped activities, defined tasks and explained what was important for learning to occur. These teachers used language to ensure that children were not only attentive but also engaged in terms of being deeply absorbed in literacy tasks. They also used a variety of linguistic strategies to stimulate and motivate the children, such as positive feedback, encouragement to share success with others, to continue with learning and to strive for high standards.

The more effective and effective teachers created energetic and exciting classrooms, in which pleasure in literacy learning was evident, as they expressed their own personal pleasure in learning tasks, stimulated suspense and anticipation of joyful learning, and generally communicated their pleasure in children's work. This creation of pleasure in their classrooms encouraged children to participate, sustain their efforts and remain on task. The more effective and effective teachers were also highly consistent in that they set clear routines that were understood and adhered to by the children and that resulted in appropriate classroom behaviour.

The classrooms of the less effective teachers varied as a group. Two of these teachers' classrooms showed some similarities to those of the more effective and effective teachers in that one of them showed high levels of attention, engagement and stimulation and the other high levels of attention and consistency, suggesting that the participation of children in literacy activities is not sufficient in of itself for effective learning to occur. The other two less effective teachers' classrooms contained little or no evidence of attention, engagement, stimulation, consistency or pleasure. Pleasure was not observed at all in three classrooms and a the fourth, was observed in only half of the coded episodes, indicating that these classrooms were not particularly happy places for young children and their teachers.





## Chapter 7: Knowledge

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The dimension that we have called ‘knowledge’ refers to a group of teaching practices related to deep understandings about the processes of learning literacy and the capacity to use this knowledge to mediate children’s literacy learning skilfully. The six teaching practices in the knowledge dimension are defined in Table 7.1 (below).

Table 7.1: CLOS Teaching Practices: Knowledge

Environment	Literate physical environment is used as a teaching resource
Purpose	Children’s responses indicate tacit or explicit understanding of the purpose of the literacy task
Substance	The lesson/task leads to substantial literacy engagement, not busy-work
Explanations	Explanations of literacy concepts and skills are clear and at an appropriate level
Modelling	Demonstrations of literacy tasks include metacognitive explanations
Metalanguage	Children are provided with language for talking about and exemplifying literacy concepts

The provision of a literate environment that is used as a teaching resource in the classroom has been found to be a characteristic of effective early years teachers as described by Mazzoli and Gambrell (2003); Snow, Burns & Griffin (1998); and Wray, Medwell, Fox & Poulson (2000). While it would be uncommon to find an early years classroom in Australia that did not include some environmental print, it is the usefulness and range of these texts and the manner in which the teacher engages children with the literate environment, that appear to impact upon the effectiveness of early literacy learning. A clear sense of the purpose of the learning task is critical to support deep and effective literacy learning (DfEE, 2000). This is demonstrated through children’s responses that indicate tacit or explicit understanding of the purpose of the task. Children’s understandings of the purpose of literacy learning links closely to the socio-cultural practice discussed by Luke and Freebody as the ‘text user’ in their ‘Four Resources Model’ of literacy practices. In their discussion of this model they emphasise the ‘purposeful social nature’ of literacy learning (1999, p. 7).

‘Substance’ or the provision of lessons or tasks that lead to substantial literacy engagement (not busy work) is seen to be an important aspect of knowledge and a teaching practice used by effective teachers that positively influences student outcomes (Hattie, 2003; Luke, Freebody & Land, 2000). ‘Explanations’ of literacy concepts and skills that are clear and at an appropriate level play a very important role in effective literacy learning, as described by Hill, Comber, Loudon, Rivalland and Reid (1998) and Brophy and Good (1986). The teacher effectiveness research suggests that effective teachers provide deep and significant learning with clear explanations of concepts and skills.

‘Modelling’ that provides demonstrations of reading and writing tasks, which include metacognitive explanations, is described in the literature as an important component of effective early literacy instruction (Wray *et al.*, 2002). Although most early years teachers in Australia are likely to include modelling as part of their literacy instruction, the quality of the metacognitive explanations that accompany their modelling of literate practices is a key factor in supporting effective literacy learning. Snow *et al.* (1998) emphasize the importance of encouraging self-regulation through metacognitive strategies. This includes ‘teaching readers to become aware of when they do understand, to identify when they do not understand, and to use appropriate fix-up strategies’ (p. 322).

'Metalanguage' or 'explicit discussion of talk and writing about how written and spoken texts work, about their features, characteristics, patterns, genres or discourses' plays a very important role in effective learning (Education Queensland, 2002, p. 7). This teaching practice is evident when teachers provide children with language for talking about and exemplifying literacy concepts.

It can be seen in Figure 7.1 that the more effective and effective teachers on the whole displayed more of the knowledge teaching practices more frequently than the less effective teachers. Hannah, a more effective teacher, demonstrated all six of the knowledge teaching practices in all of the coded episodes. Jane, an effective teacher, showed a similar pattern, apart from one episode that was not characterised by explanation. The other effective teachers demonstrated all of the knowledge teaching practices to a greater or lesser degree, although Jenny, a more effective teacher, was not observed using the literate environment in any coded episode. However, at the time of the study Jenny was in an administrative position in the school and no longer teaching in a classroom, but had agreed to teach in another teacher's classroom for the purposes of the observational phase of the study. As she had not set up the literacy environment in this classroom and was relatively unfamiliar with it, it is not surprising that she did not make use of it. In the classrooms of two of the less effective teachers no instances of metalanguage were observed. Similarly two of these teachers showed no evidence of use of the environment. One of the less effective teachers was not observed using any of the knowledge teaching practices apart from modelling.

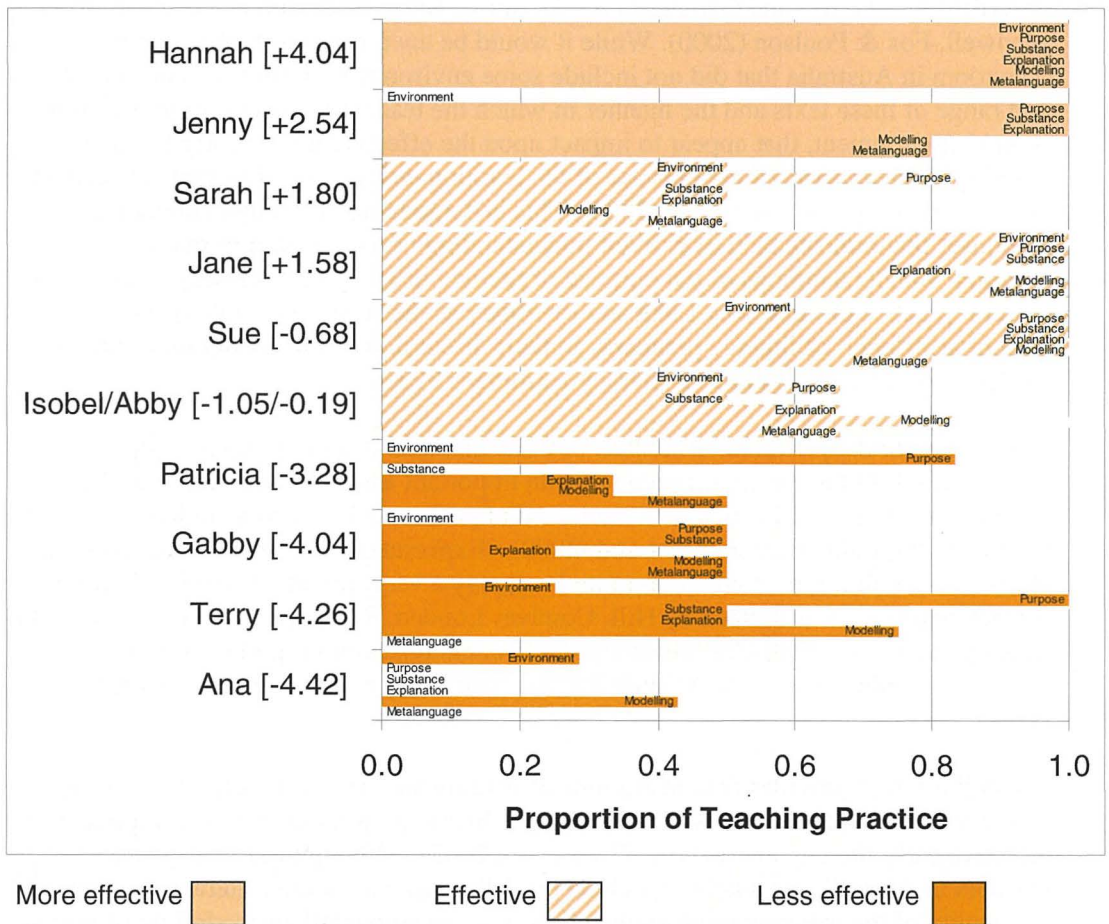


Figure 7.1 Proportion of teaching practices present in episodes, by teacher, for the knowledge dimension of CLOS<sup>13</sup>

<sup>13</sup> Figures in parentheses indicate the children's learning gain adjusted residual in standard deviation units for each teacher's classroom.

The importance of the teacher's comprehensive knowledge of literacy for improving the literacy outcomes of children was shown by Hannah, the most effective teacher we observed. Hannah not only demonstrated all six of the knowledge teaching practices in all coded episodes, but she also demonstrated them at a high level of quality. Hannah's own deep and extensive knowledge of literacy and literacy learning and teaching was evident in the ways in which she presented literacy knowledge to the children and engaged them in significant literacy tasks. Hannah's knowledge was informed by a variety of experiences and educational initiatives that could well have influenced her teaching and led to the achievement of the high quality outcomes achieved by her children. She had taken advantage of many opportunities to develop her knowledge of literacy teaching through practical experiences, in-service courses and postgraduate teacher education. Initially, she had completed a degree in primary education with a focus on special education and she had taught in both mainstream classes and in a specialist facility for children who had language difficulties. She had completed a Graduate Diploma in Teaching English as a Second Language and worked for some years as a TESOL teacher. In addition, she had taken part in substantial professional development throughout her career. Thus, her extensive knowledge of literacy and literacy teaching had been gained from a combination of a variety of teaching experiences, postgraduate study and professional development.

### **Environment**

The effective use of environmental print in early literacy classrooms has been an established practice since the work of Goodman (1986) and Smith (1982) and the ongoing research of Clay (1985; 1998). More recently an International Reading Association commissioned report (Hoffman *et al.*, 2003a) identified the range of environmental print in classrooms as a major factor in early literacy acquisition.

Hannah's classroom was awash with print of many genres that were used for a range of purposes. She drew attention to the physical environment every morning when she used the weather, days of the week and months of the year charts in a highly sophisticated way to teach the children how to read the days of the week, the months of the year and vocabulary related to describing the weather. Whenever she was discussing new vocabulary, how to spell new words, letter-sound relationships or what to do when reading unknown text, she consistently encouraged the children to refer to the environment to provide them with clues that could help them resolve their problems. In the following episode she encouraged the children to use a chart she had made to help them understand how they were going to observe worms and then to record their answers.

- T: And remember we talked about we're going to use our- two of our... senses. I think you can tell by the pictures here on the board what senses we're going to be using today when we observe our worms. What do you think they're going to be? Tell the person next to you.
- SN: Looking and feeling.
- T: What are they going to be? //Brian?
- SN: //Looking.
- T: Shh. What senses are we going to use today, Craig? What can you see up on the board?
- SN: Eyes.
- T: Eyes. And what sense is that?
- SN: Looking.
- T: Looking. What's another one?
- S: Feeling.
- T: Feeling, that's right. Who can tell me? Steve?

SN: Looking and feeling.

T: Looking and feeling.

[B4K10\_1:06:57]

Another example of the teaching practice of using the environment as a teaching resource that was also observed in Hannah's classroom took place as she prepared the children to write about worms. In the following episode we see how she encouraged them to use a variety of resources in the environment to help them spell the word *worms*. With Hannah's help they located the written word in several places around the classroom.

T: Now lots of people said, "Up there we have brown, dark pink, red". All those answers are right because if you look at a worm, it does have all those colours in it. But for today I'm just going to say, "Worms...are...brown". I learnt that today, "worms are brown". OK, now *worms*, where would I find the word *worms*, if I want to be able to write it? There's lots of places where you can see the word *worms* in our room. Who can tell me? Brian? Thought you must know because you were touching things then. Where can you find the word *worms*?

SN: Up there.

T: Thank you. Up the back the word *worms* is written. Can you all see it up there?

Ss: Yeah.

T: I can see it. Where else is it written? Robyn?

SN: On the page and on the whiteboard.

T: It's written on our page.

[B5K10\_2:01:39]

Sue, an effective teacher, also referred children to environmental print in the classroom in order to help them spell words in their writing.

T: You've got- oh, *I went*. What comes next?

S: /w/

T: You're right. You know *went*. There's your chart if you want to have a look. On - okay, what day?

S: Um, Sunday.

T: Sunday? *Sunday* is over there, but you know what *Sunday* starts with, so let's get started. /Sun/...

[J3K10\_0:24:01]

The less effective teachers made little or no use of the literacy environment. In the few instances where they were observed to make reference to this teaching resource, the references did not appear to facilitate the children's learning. For example, in the following episode a less effective teacher was trying to teach letter-sound correspondences by drawing children's attention to words she had written on the board. The teacher had described the task as to 'find /p/ words' and a child had volunteered the word *pig* which she accepted.

T: *Pig*. Is there another word with /p/ sound?

SN: *Elephant*?

SN: No.

T: /p/ an *elephant*?

S: No.

T: Has *elephant* got /p/ sound?

S: No.

Ss: [inaudible]

T: No.

SN:*E.*

T: Okay. No, *elephant* doesn't have /p/ sound. Can you find me another /p/ word? Can Andrew go and point to the *P*? Letter *P* on the board, Andrew. Let Andrew do it. Where's *P* on the board, Andrew? Good boy! Okay. Can you find me another word that's got a /p/ sound? [5]

SN:*Sun.*

[A2K10\_1:17:36]

It can be seen that this less effective teacher may well have confused the children as there was no consistency in the way she referred to letter sounds and letter names. When a child nominated *elephant* as a /p/ word, she negated his response, but did not point out that *elephant* contained the letter *P*, nor did she explain that she was focusing on sounds not letters. In fact after she had told the child that *elephant* didn't 'have a /p/ sound', she asked another child to point to the letter *P* on the board, without making clear the relationship between the sound /p/ and the letter *P*. The confusion of some of the children can be seen in their responses, for example that of the child who volunteered the beginning letter, not sound, of *elephant* and the child who gave the word *sun* as a /p/ word after a long pause and at the end of the interchange.

### Purpose

The teaching practice identified as purpose refers to the ways in which children's responses indicate tacit or explicit understanding of the purpose of the task. All but one of the teachers' classrooms contained some episodes where it appeared that the children understood the purposes of tasks. Nevertheless, this understanding of purpose was, on the whole, more often observed in the classrooms of the more effective and effective teachers, although all observed episodes of one less effective teacher were also characterised by this teaching practice. Most teachers ensured that their children understood the purpose of set tasks for at least part of the time. In the following episode, Jane, an effective teacher, was sharing the Big Book, *Big Sea Animals* (Smith, Giles & Randell, 2000). She had already made clear that the purpose of this task was to use picture and graphophonic clues to make meaning from the text. As individual children took turns to read she reinforced this purpose by directing the children's attention to picture and graphophonic cues when they had difficulties in decoding unfamiliar words. As she scaffolded Tyler through his reading he became increasingly able to use these cues to make meaning. By the end of the interaction he appeared to understand how to apply these cues relatively independently, thus demonstrating his implicit knowledge of the teacher's purpose.

T: Tyler, up here.

SN:*Big Sea An - Big Sea ... Come.//*

T: // *Come...*

S: *And look at the fish.*

T: *The...*

S: *The fish is big.*

T: Good boy. *Come...*

S: *Come and look at the crocodile... alligator.*

T: No.

S: *Crocodile.*

T: Yeah, because it starts with a...?

S: /c/

T: /c/ for *crocodile*. Right. *The...*

S: *The //crocodile is big.*

T: // *Crocodile*. Good. *Come...*

- S: *Come and look at the turtle.*  
T: How do you know it's a turtle? How did you get the clue? What did you do? You looked at the...?  
S: Word.  
T: And what's that? It's a picture.  
S: [inaudible]  
T: Right. Okay. *The.*  
S: //The turtle is big.  
T: //c/ Come...  
S: //Come and look at the...  
T: What do you think that is?  
S: Whale.  
T: No, it's not a whale.  
S: /d/ dolphin.  
[I12K24\_0:41:32]

Sarah, another effective teacher, provided a very clear example of purpose when she encouraged a child to explain what to do when reading did not make sense. Here she explained that the purpose of learning was for children to be self-monitoring and to notice if meaning became confused. She also encouraged the children to use the strategy of re-reading to see if they could clarify meaning. In this way Sarah made clear that the purpose of reading was the pursuit of meaning and that to achieve this end children needed to self-monitor and self-correct. In this second year of school class the strategies that were introduced for making meaning were more sophisticated than those in Jane's first year of school class. Sarah explained that it was 'OK' to make a 'mistake' when 'it didn't really make sense' because 'that's how you learn'.

- T: Fantastic Carol! Now let me tell you something. When Carol was doing her work today, we went back to the sentence didn't we Carol when you finished it, and what happened when you started to read it?  
S: Um, I got a bit mucked up on it so I um, started again and I did and then I, um did it properly.  
T: Carol was reading it. She decided that it didn't really make sense didn't you, Carol? So then she went all the way back, and she started and she fixed it up. Was that okay that Carol made a mistake?  
S: Yes.  
T: Yes, because?  
SS: That's //how you learn.  
T: //That's how you learn. Did you learn that today, Carol?  
S: Yep.  
T: Let's give her a clap! Well done! [claps]  
[H8K24\_0:57:03]

In the following episode in Jenny's second year of school class the purpose of the task was to understand characterisation. Jenny made clear to the children that when they were reading aloud a change of voice signified the change of character from story-teller to giant. She drew Brian's attention to the fact that he had implicitly understood the purpose of the task when he had changed his voice to suit different characters. In doing this she made the purpose of the task explicit for him and the whole class.

- T: "No," said Sadie the shopkeeper, "I have no more boots". Who'd like to be the giant?  
Ss: Me.  
T: I will find a person I think will be a good learner. Brian!

SN: *"No boots," cried the giant, "but these boots have holes."*

T: Excuse me. You changed your voice. You were the giant until you got to this bit, *"cried the giant"*. Why didn't you use your giant voice here?

S: Because that's not what the giant was saying. That's what it's telling you.

T: That's sort of the story-teller's part. It's showing us who is doing this talking.

Brilliant! I loved it! Everyone: *"You have stamped and tramped too much," said Sadie.*

[C4K24\_0:22:30]

Further examination of these episodes from the classrooms of the more effective and effective teachers shows that the purposes of these tasks was to acquire significant literacy knowledge and skills. There were qualitative differences in the purposes of tasks constructed by these teachers compared to those of the less effective teachers. In the classes taught by the less effective teachers the purposes of the tasks to be undertaken by the children were often of a lower order and not explicitly stated. For example, in the following episode from a less effective teacher's classroom, the implied purpose of the task was to write in a neat and orderly manner without rushing.

T: Right, Daniel. What are you writing? Beautiful writing there! And Ahdelia's is lovely; lots of ticks, Ahdelia.

SN: My brother taught me how to write like that.

T: Did he? That's interesting. How are you going? Taking your time, that's all right!

[G5K24\_1:26:14]

A lack of explicitness of purpose was frequently observed in the classrooms of the less effective teachers. Moreover, whilst most of the teachers paid some attention to word and letter formation, the more effective and effective teachers usually made clear to the children that neatness of handwriting was a means to achieving effective writing outcomes rather than being an end in itself.

In essence the more effective teachers gave clear explanations of the purposes of literacy tasks and their purposes were often of a higher order than those of the less effective teachers whose lower level purposes were often implicit. It was not that the more effective and effective teachers did not indicate implied purposes. As can be seen in the above examples, some of these teachers had additional overarching high level purposes embedded within tasks for which the immediate purpose was explicitly stated. In her discussion of characterisation, Jenny, by implication, made the purpose of school clear, as she commented that she was looking for 'a good learner'. Here she was constructing children who were good learners as the children who were successful at school. However, unlike the less effective teachers, Jenny had made explicit the purpose of the immediate literacy task, that of differentiating between characters. This suggests an inter-relationship between the practice of purpose and substantial literacy learning as observed through the practice of substance.

### **Substance**

The literature (Hattie, 2003; Luke, 2003) suggests that effective teaching is related to the quality and depth of what is learnt in the process of learning literacy. The teaching practice we called substance refers to the ways in which a lesson/task leads to substantial literacy engagement that is not characterised by 'busy work', or tasks that do not have the potential to facilitate children's learning. This teaching practice is closely related to 'substantive conversation' as it is described in the Productive Pedagogies Theoretical Framework (Education Queensland, 2002), which involves 'sustained conversational dialogue between students, and between teacher and students to create or negotiate understanding of subject matter' (p. 4). Hannah, Jenny and Jane demonstrated this teaching practice in every observed episode. Hannah engaged the children in a



substantial literacy activity through their participation in a joyful reading of the text *Who Sank the Boat?* (Allen, 1982) after which she carried out a drama activity and challenged the children to explain who really did sink the boat.

T: Who sank the boat?

S: All of the animals.

T: You think all of the animals did? Why?

S: Because it get, it got so heavy when the mouse got in, it sank.

T: It got so heavy when the mouse got in that it sank. That's right. So, if the mouse had gone first, would it have sunk then?

E: No.

T: Why not? Steve?

SN: Because the mouse was more lighter.

T: Because the mouse was light. So if the mouse went first and was the only one in there it prob, it probably wouldn't have sunk. It was because all the animals had got in, it got heavier and heavier, and the last one was the mouse and it just made it that much too heavy didn't it? And it, it sank. And they all fell into the water. Well we're all going to get into a boat.

[B13K30\_0:45:55]

The concepts of weight and displacement of water dealt with in this discussion were complex and Hannah showed careful scaffolding of the dialogue to provide the children with substantial learning about mathematics and science through a focus on literacy.

Jane also provided a substantial learning episode when she was discussing the pictures in a big book about transport that she had made for the class. During this episode she engaged the children in sharing experiences of concepts about history and made links to the way the world is today.

T: This is early Australia. This is a bullock team. This is like the big cows. Bullock teams used to do a lot of hard, the hard work in the timber industry. Today large trucks haul the logs to the mill. We have lots and lots of trucks coming past here. These boys are riding their bicycles to school and they're not wearing helmets. Do you know why?

Ss: Why?

T: Why? Cos it was a long, long time ago.

SN: They didn't have helmets.

T: That's right. And when your daddy was a little boy he didn't have to wear a helmet. And when your mum was a little girl she didn't have to wear a helmet.

[I13K30\_0:31:43]

Substantial engagement in a literacy task was clearly demonstrated when Jenny encouraged her class to think of vocabulary associated with giants. When one of the children suggested the word *humungous*<sup>14</sup> she took the opportunity to engage the children in thinking about possible spellings of this word. Throughout this episode the children were clearly learning a great deal about the structure of complex words.

T: *Giant*. Who could give me some words? What popped into your mind immediately that I said that word *giant*? What popped into your mind? Shane?

S: *Humungous*.

---

<sup>14</sup> *Humungous* did not appear in any printed dictionary consulted, but did appear in the MS Word dictionary as spelled *humungous* or *humungous* and defined as an 'informal' adjective meaning 'extremely large in size or amount'.

SN: Uh-oh. Pardon?  
T: *Humungous*...[10].  
SN: She can't spell it.  
T: It's one of those words that's sort of - just sort of grown up, and I need some help.  
*Humungous*.  
T: /hu/  
SN: Who can help me out? *Humungous*. What sounds can we hear?  
T: Come on, Shane. You said it. Help me out.  
SN: [inaudible]  
T: Oh thank you. Here's a boy who's helping. He's learning. Brilliant! Carl, have a go.  
S: *H U M*  
T: *H U M*  
SN: *U G E S*  
T: Leo, what would you put?  
SN: *W H O*  
T: Sorry Leo. *Humungous*.  
S: *W H O*  
T: Have a listen. Have a listen. *Humungous* [slowly articulated]. Okay, go for me.  
S: *H U*  
T: /oo/, /oo/. We've crossed out the *W*. Now? /m/ /m/.  
SN: *M U N G E S*  
T: Mm? Anyone else got any ideas? One more person.  
SN: *O W*  
[C9K30\_0:06:02]

These examples demonstrate how substantial literacy engagement appears to facilitate children's literacy processes and systems. An examination of the episodes from the less effective teachers' classrooms showed that where substantial literacy engagement was observed it was constructed in their classrooms as of a more routine nature and at a different level of complexity from that shown by the more effective and effective teachers.

### Explanations

Explanations of literacy concepts that are clear and at an appropriate level play an important role in helping children with early literacy acquisition (Hill *et al.*, 1998). This seems to be particularly so for children who begin school without many skills in literacy and who have not been immersed in a range of literacy activities in their homes (Freebody, Ludwig & Gunn, 1995).

Many teachers frequently confuse the concepts of letter sounds and letter names, as was seen in the episode in which a less effective teacher was observed asking the children to find /p/ words. Clear explanations are seen to be of great importance for early literacy learners (Snow *et al.*, 1998). In the episode below Jenny provided a very clear explanation of the difference between letter sounds and letter names.

T: Put your pencils down and your eyes this way. I need someone to give me a word that begins with my /g/ sound. Robby?  
SN: *Game*.  
T: *Game*. How am I going to write *game*. Robby?  
S: *G A M E*.  
T: Ah. Wait a moment. Did Robyn sound out that word or was she clever enough just to spell it out? She spelt it out, using the names of the letters. Very good, Robyn. Tell me a game. Tell me a game.  
[C11K11\_0:21:58]

Similarly, Hannah provided extremely clear explanations about the concepts of letter names, letter sounds and words. She usually accompanied these explanations by signalling the number of sounds with her fingers, using two fingers when a digraph was part of the word. In the following episode Hannah explicitly taught the spelling pattern *QU*, which she taught as representing one sound, and which, whilst it actually represents the two phonemes /k/ and /w/, is often taught by early years teachers as a digraph that represents one sound. The clarity of Hannah's explanation is shown in the transcript below.

- T: Now we're going to have a go at writing a word. Are we ready? When I say the sound /qu/ how many letters are we going to write for that sound? Jack?
- SN: Two.
- T: Two letters because we write *Q* and *U* to make the sound /qu/.
- Ss://qu/.
- T: Here's the first word. Are we ready?
- SN: Yes.
- T: Lourie are you listening? /qu/ /i/.../qu/ /i/ /t/.
- SN: *Quit*. /qu/ /i/.
- T: So you're going to have, how many letters altogether?
- SN: Four.
- E: //Four.
- T: //Four.
- [B16K11\_0:09:58]

The clear explanations given by the more effective and effective teachers were not only at the word level, but they also gave extremely clear explanations of the features of whole texts. In the following episode, Sarah was discussing the structure of narrative. Having asked the children to identify the elements of a narrative and accepted their responses, she then expanded the children's contributions with clear explanations about the purpose of each of the elements.

- T: Who can remember what the parts of the story are, what are the three parts we need to remember? Aidan?
- SN: Middle - ah – beginning, middle and end.
- T: Yes, good boy. We have to have a beginning, where they tell us who the characters are, and maybe where the story's going to take place. Then we have a middle, and we find out what happens in the story, and then we have an ending to find out how it's going to finish. Miss Jones might help me to hold this one out. I've already made our big chart for us, and I've divided it into the three parts that we will need to be looking at today. We've got the beginning, the middle and the end.
- Ss: Beginning, middle and the end.
- [H14K11\_0:37:56]

There was overall much less evidence of clear explanations by the less effective teachers and there was a particular lack of evidence of clear whole text explanations. On the few occasions where they did provide clear explanations those of the less effective teachers were usually limited to explanations of sounds or letters.

### **Modelling**

Modelling was a well used teaching practice in our sample of teachers in that all were observed to demonstrate modelling at some time and more than half of them were observed demonstrating modelling in more than half of their episodes. Given the long established practice of using modelling in early years classrooms in Australia one might not expect its frequency of use to differentiate markedly between teachers. However, it

is demonstrations of reading and writing which include metacognitive explanations that are significant in providing the most effective knowledge for learners (Wray, *et al.*, 2002). This is evident in the qualitative data in which we see the more effective and effective teachers at work.

Hannah provided very clear metacognitive guidance when she modelled how to participate in a drama based on the text *Who sank the Boat?* (Allen, 1982). She gave linguistic guidance by demonstrating how to use the language of the book the class was exploring. In this episode the modelling provided guidance about how to carry out the activity and how to use language appropriate to the context. Hannah provided metacognitive explanations of how to ask and answer questions in a specific situation, thus giving the children not only the concept but also the specific language to use in questions and answers. She modelled several acceptable alternatives in terms of possible answers.

T: Now when we get into our boat, David, we need to be sensible. Okay? All right. Let me see if I can get down on the floor. I'm just going to take off my shoes to do this because it's easier. And remember if you're asking someone a qu - if someone asks you a question - so Robyn might have said, "Would you like to come into the boat?" What are you going to answer back to them? Cassie?

SN: "Yes I would".

T: "Yes I would", or, "Yes I will", or, "I'd love to come into the boat with you". Now you have to give an answer. You can't come into the boat unless you give an answer. Okay? I'm going to sit down. Let me see. Um – Brian, I'm going rowing today, "Would you like to come into the boat?"

[B18K20\_0:50:26]

In the following episode, where Sarah was observed modelling the function of an exclamation mark she accompanied it by a clear metacognitive explanation. Her teaching strategy included ensuring that all children could visually recognize a question mark in the text and giving them positive reinforcement for this recognition, before proceeding to model the change of oral reading expression signified by the exclamation mark.

T: Now, have a look at this one, we haven't talked about this one today, and there's three of them in a row here. It's a line with a dot. What's that one? Madison?

NS: Exclamation mark.

T: What is it?

S: Exclamation mark.

T: She is...//sensational!

E: //Sensational!

T: Exclamation mark, well done! What do you need to do when you see an exclamation mark?

NS: Change your voice.

T: Nina, I love the way your hand's up.

NS: Umm. Change your voice.

T: You need to change your voice, don't you, a little bit differently, and put a little bit of expression into your reading. I could read it like this [reads in a monotone], "*No money, no cow only beans*". That's a bit boring isn't it? When I see an exclamation mark we can do what we call *expressing* and change our voice [reads with animated expression], "*No money! No cow! Only beans!*" That makes it sound a little bit more interesting doesn't it?

[H16K20\_0:07:46]

This examination of the qualitative data shows examples of how the more effective and effective teachers used the teaching practice of modelling to make particular metacognitive processes clear to the children. The modelling they provided was both cognitively clearer and more accurate than the modelling provided by the less effective teachers. The less effective teachers tended to use modelling with little metacognitive explanation, such as when they modelled reading by reading aloud a Big Book, giving few or no explanations of the mental processes they were using. In the following example a less effective teacher was reading to the children from the large text narrative *At the Pool* (Depree & Iversen, 1995) and asking them from time to time to re-read what she had read.

T: *I had to be carried over bridges. I always shut my eyes. Yes, Josie?*

SN: *He held on tight to [...]*

T: Do you think he's having a good time or he's scared?

Ss: Scared.

T: Everybody. // *Much later when I was five I learnt to swim. I learnt to jump from the sides of the pool too.*

E: // *Much later when I was five I learnt to swim. I learnt to jump from the sides of the pool too.*

T: Does anyone have a comment? Amanda?

SN: It's the deep end.

T: He's down in the deep end so he's getting much more confident. *But I really wanted to learn to jump from the diving board. Mum said that I could try.*

[G13K20\_0:20:51]

Here, whilst it is possible that the teacher could be facilitating some children's fluency in oral reading with her oral reading demonstrations, there was little evidence in this episode, or other episodes that feature this less effective teacher, of metacognitive explanation. At times she invited comments about what seemed to be happening in the pictures but did not offer any explanation of the strategies she used to ensure fluency of oral reading. She also did not clearly explain how to make meaning from the text, which could well have been her intention in inviting the children's responses. She expanded on Amanda's comment about the picture in the text, *It's the deep end*, making the inference that the hero of the story was *down in the deep end so he's getting much more confident*, but she did not really explain the mental processes she used in making this connection.

In summary, all of the teachers in the study did provide some modelling for the children in their classes in terms of providing demonstrations of literacy use. However, in terms of modelling defined as demonstrations of reading and writing tasks [that] include metacognitive explanations, the more effective and effective teachers not only used this teaching practice more often than the less effective teachers but their modelling was accompanied by qualitatively different metacognitive explanations.

### **Metalanguage**

The importance of providing children with a language for talking about and exemplifying literacy concepts is an important aspect of the knowledge dimension (Luke, 2003; Snow *et al.*, 1998). The more effective and effective teachers were observed to use the teaching practice of metalanguage more often than the less effective teachers, two of whom were not observed using this teaching practice at all. The more effective teachers were particularly skilled in the use of metalanguage.

Jenny's metalanguage teaching practices were highly sophisticated. In the following episode she provided the children with the vocabulary with which to describe vowels.

- T: And if I say /a/ /e/ /i/ /o/ /u/, or I can say *A E I O U*, one I call short, one I call long. Do you know why I call them short?
- SN: Ah, because, um, when you say them they sound short.
- T: They take a short time to say. And of course I call them long ones because they take a...
- Ss: //Long.
- T: //Long time to say. Give me the short vowels.
- [C21K19\_0:51:53]

Jenny also gave the children the language with which to describe some literary concepts of the narrative genre, including purposes for writing narratives.

- T: What type of book is this book?
- SN: A narrative.
- T: A narrative. That's right. A made-up story. Why do we say it's narrative?
- SN: [inaudible]
- T: Why do we have narratives?
- SN: To trick people and scare them.
- T: Maybe to trick or scare. Erin, why might we have a narrative? Why do people write narratives?
- SN: [inaudible]
- T: It could be. Yes. Would you say they could entertain us? These books are fun to read. Thank you very much people.
- [C23K19\_0:35:23]

Hannah provided the children with some explicit language structures to help them recognise how different words can be used to ask questions. In the following brief extract from an episode we examined previously in terms of the teaching practice of modelling, she explicitly drew the children's attention to the way in which the word *would* might be used to ask a question.

- T: *Would* you like to come into the boat? Was that a question?
- S: Yes.
- T: Let's just check over here. Do we have *would* up there?
- E: No.
- T: I'd better quickly put that up because Robyn has just got another question word for us. *Would* you like to come into the boat? Thank you, Robyn.
- [B29K19\_0:49:53]

The examples above contrast conceptually with the metalanguage used by the less effective teachers. These teachers did not consistently and clearly draw children's attention to features of words and texts through the use of specific metalinguistic vocabulary, as has been demonstrated in the episodes from the classrooms of the more effective and effective teachers. Further, when the less effective teachers did use specific metalinguistic terms they were sometimes not contextually appropriate. In the following example a less effective teacher was observed as she asked the children to read flash cards on which were written individual key words from the book *The Very Hungry Caterpillar* (Carle, 1970).

- T: Good girl. Lovely reading. Oh, here's a long word. It's out of the book. We haven't seen it before.
- SN: *Star*.
- T: Good girl it does start with /s/. Excellent! Are you looking? It does start with /s/. Very good. Georgia thinks it starts like *star*, but it has too many letters for *star*,

doesn't it? That was a very good thought. It's a long one. I know, let's sound it out together. Go... /s/ /t/ /r/ ...

Ss /s/ /t/ /r/ /a/...

T: What's A W?

S: [inaudible]

T: No, it's a *digraph*. Let's not guess until we've sounded it out. It's a *digraph*. A W says /aw/ in this word. Keep going *str /aw/ b/ /e/ /r/ /ee/*. What is it everyone?

Ss: *Strawberry*.

[E11K19\_0:20:07]

This episode that shows a less effective teacher in action may be contrasted with that in which we saw Jenny, a more effective teacher, use the teaching practice of metalinguage with great clarity to explain to a second year of school class the concepts of long and short vowels. Jenny specifically focused the children's attention on vowels and, in the brief discussion, retained this focus. This less effective teacher was also focusing on word parts as she tried to help the first year of school children to decode the word *strawberry* on a flash card. She used the metalinguistic terms 'word', 'letter', 'sound' and 'digraph' as she did this, but it is likely that the use of all these terms, particularly 'digraph' was confusing for the first year of school children, many of whom were observed in other episodes as not being able to differentiate between the concepts of letter and sound. Since the teacher's aim in the extract appeared to be recognition of a 'long word' that was very difficult for these young children to 'sound out', it seems that telling them 'the letters AW represented a digraph' would be confusing for them.

### Summary

The more effective and effective teachers showed an understanding of the literacy concepts and skills taught in early years classrooms that underpinned their classroom practice. With the exception of one teacher who did not have access to her own classroom, the more effective and effective teachers provided a literate environment for the children in their classes and made substantial use of this environment in their teaching, a practice that has been found to be extremely important in early literacy learning (Snow, Burns & Griffin, 1998). In their classrooms were many information charts such as the weather and days of the week that were used as part of daily routines. There were also dictionaries, word charts and a range of texts and other resources around the room to guide children's personal writing. These teachers prepared the environment so that everything they needed for a particular session was either at hand or in a well-known place for immediate accessibility.

All but one of the classrooms contained some episodes where it appeared that the children understood the purposes of tasks, although this was more evident in the classrooms of the more effective and effective teachers. These teachers made explicit the purposes of set tasks, which were often of a higher order than those of the less effective teachers, and they sometimes conveyed to the children, often implicitly, purposes beyond the tasks at hand that had to do with overarching purposes such as school learning and future success. Closely related to purpose were the ways in which the more effective and effective teachers created tasks that allowed for substantial learning to take place as teacher and children engaged in dialogue that led to deep understanding of concepts and skills. The more effective and effective teachers also provided their children with clear and appropriate explanations of literacy concepts, both at the word and text levels.

All teachers made some use of modelling in their literacy teaching as they presented shared book experiences and modelled writing. What was noticeable about the more effective and effective teachers was the clarity and level of their metacognitive explanations. These often included the use of metalinguistic terms that provided the

children with the vocabulary and linguistic structures that helped them make connections between what they already knew and the concepts being learnt. The metalanguage taught included literary terms as well as those associated with the features of letters, sounds and words.

In contrast to the classrooms of the more effective and effective teachers, those of the less effective teachers were characterised by little or no use of a literate environment, metalanguage, substantial engagement in literacy learning or clear explanations of literacy concepts. Whilst the children in some of these classes indicated either tacitly or explicitly that they understood the purposes of set tasks, these purposes tended to be of a lower order than those of the more effective and effective teachers and were more likely to be of a routine nature. All of the less effective teachers used modelling to some extent, but they tended to use it with little metacognitive explanation and on the relatively few occasions when they did use such explanations they did not usually show clear connections between the literacy task and the mental processes being used.



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