

Learning to Read and Reading to Learn

Editors
Eithne Kennedy
Tina M. Hickey



Reading
Association
of Ireland

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and
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EDITORS:

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READING ASSOCIATION OF IRELAND

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Preface

This volume is based on the 28th Annual Conference of the Reading Association of Ireland, and offers a range of papers devoted to the theme of *Learning to Read and Reading to Learn*. The three keynote speakers discuss aspects of the past, present and future of the teaching of reading in Ireland and internationally. Other papers consider a range of reading research including early literacy instruction, reading in disadvantaged areas, intervention for children with specific learning difficulties, assessment, and reading in the Irish language.

In the first keynote *Mark Morgan* (St. Patrick's College) reviews the substantial research on reading in Ireland since the late 1950s, and comments that, while reading may be the most researched feature of Irish education, relatively little attention has been paid to 'reading to learn'. He considers the evidence regarding the significance of literacy for learning in school, and its critical importance in transferring successfully from primary to post-primary school, yet he notes the low priority accorded to reading in post-primary education. Morgan reminds us of the personal curtailment suffered by those with limited literacy. Morgan argues that we need to focus on prevention rather than remediation, and reassert the primacy of literacy as the foundation of learning. He suggests that the priority for the next Curriculum Review should be a consideration of the centrality of 'reading to learn' and issues such as the time allocated to literacy in a crowded curriculum, developing advanced comprehension skills and the role of reading in developing higher-order thinking skills.

Finian O'Shea (Church of Ireland College of Education), the second keynote speaker, continues the focus on reading to learn. He looks at some current approaches to fostering comprehension in the classroom and highlights the need to move away from a reliance on teacher-initiated questions of limited interest or challenge to the reader, and toward more reader-centred activities. O'Shea argues that promoting comprehension requires that teachers start asking more probing questions, so that children will be exposed to, and learn how to ask, more inferential and evaluative questions and engage more fully with texts. He explores a number of strategies in the pre-reading, during-reading and post-reading phases to help children to interact with fictional text and argues forcefully for a different and more sensitive approach to story comprehension than that required for expository texts. The comprehension of fiction, he suggests, can be further promoted through the experience of Literature Circles which encourage the child's response and serve as a springboard to further development, empathy and discussion. These have a higher value in

promoting real understanding than the frequent shallow book reports and superficial worksheet activities of many classrooms.

Eve Bearne (Homerton College Cambridge), the third keynote speaker, considers the topical issue of concern regarding the declining standards of literacy among boys. Government tests in the UK show a continuing and, in some areas, increasing, gap between boys' and girls' literacy achievement, especially in writing. Bearne discusses the findings from several research projects in the United Kingdom. Surveys conducted prior to intervention highlight that boys experience a high 'fear factor' in relation to reading aloud in class, citing fear of embarrassment. She claims that boys tend to make better progress when the emphasis is placed on 'being a reader' rather than on 'learning to read'. In order to achieve this shift in emphasis she recommends enhanced provision of books and extended access to them, buddy systems where older boys mentor younger ones, reading groups which stress enjoyment and sharing of the pleasure of reading, teachers modelling ways of responding to the meaning of books rather than on decoding, homework that encourages reading a wide variety of text genres, and drama activities that help a student to experience a text more vividly. Bearne concludes that many children need wider experience of the language to talk about writing before they are ready for writing itself and that an integrated approach to literacy is crucial.

Martin Gleeson (Mary Immaculate College) focuses on early literacy instruction. He begins by presenting a synthesis of the international research on evidence-based early literacy instruction and raises a number of interesting points in the discussion of the English Language Teacher Guidelines (1999) in relation to the international research presented. This research underpinned the design of an early literacy intervention project which sought both to prevent reading difficulties and to accelerate reading development. Elements of the programme are clearly outlined and the results of the programme present some interesting longitudinal data in an Irish context. *McClernon, Ferguson and Gardner* (Queen's University of Belfast) also look at early literacy instruction, examining the differences between the '*Phono-Graphix*' approach (McGuinness & McGuinness 1998) and other reading approaches. They specifically highlight differences in the teaching of letter names, letter-sound correspondences, decoding of words, the development of a sight vocabulary and the introduction of early reading materials. '*Phono-Graphix*' claims to be a logical and effective method of helping children learn to read, and the authors explore its suitability for teaching children with moderate reading difficulties in Ireland and the United Kingdom.

Another engaging contribution examines the teaching of science through literacy-rich lessons. *Ginny Muller* and *Anne Tapp* (Saginaw Valley State University, Michigan U.S.A.) share the *Quality Science Experience Cycle* and illustrate how children in the early stages of literacy can be taught to read and write effectively through using non-fiction levelled texts and providing opportunities for children to record their observations and document their experiments. They present a framework and a number of useful strategies that can be used to simultaneously teach science concepts and literacy skills in rich and authentic ways.

Emer Eivers (Educational Research Centre, Dublin) shares some of the qualitative elements of the study on *Reading Literacy in Disadvantaged Schools* (2004). She presents the views of parents, teachers and principals in a Dublin suburb and a country town through data obtained from semi-structured interviews. While there were differences in priorities among the city and town participants, their recommendations included the extension of Early Start and Reading Recovery, early targeting of oral language development, earlier intervention and better access to NEPS, more help getting parents involved in Shared Reading, improved public libraries and more class time devoted to reading in designated disadvantaged schools. *Timothy Blair* (University of Florida) considers the challenge of teaching reading to children in Florida from low socio-economic backgrounds as well as from a variety of racial, cultural and ethnic backgrounds. In line with international research, he argues that more than anything it is the teacher and the quality of instruction in the classroom that matters most. He discusses the characteristics of effective literacy instruction and outlines the features of innovative reading programmes in culturally diverse classrooms.

Turning to the issue of assessment *Siobhán Cahillane-McGovern* (St. Patrick's College, Dublin) and *Kathy Hall* (Open University) look at different tools used in assessing reading, and examine the messages about reading and learning that they convey to children. They present data on children's perception of being tested, and argue that formative assessment (as well as the required periodic standardised testing) allows children to feel part of the process and more aware of what they need to learn, rather than of their failures and mistakes.

The early identification of reading difficulties requires sensitive and appropriate testing, and *Pauline Cogan* and *Ray Fuller* (Dyslexia Research Group at Trinity College, Dublin) present an up-date on the development of the Trinity Early Screening Test for Dyslexia, a battery of tests currently being developed for children aged 4-6 years. They describe

the two phases of the project and the statistical analyses conducted to identify the predictive sub-tests of the screening instrument. This is a longitudinal study which will ultimately lead to the development of a screening instrument normed on Irish children, an important and welcome development.

A significant challenge facing many pupils worldwide is that of learning to read in more than one language, and learning the rules relating the orthographies and phonology of their different languages. *Lyddy, Ó Loinsigh and Parsons* (NUI, Maynooth) collected Stroop test data in order to explore the differences between English-dominant and Irish-dominant bilinguals in how they process text in Irish and in English. Such analysis of how bilinguals process reading in their two languages offers valuable information on this complex psycholinguistic task.

In all, this volume presents a valuable sample of papers covering a number of the most topical concerns in the field of literacy, and gives an excellent insight into national and international research on literacy today.

Eithne Kennedy and Tina M. Hickey
Reading Association of Ireland

1 Reading to Learn: A Major Social and Educational Issue

Mark Morgan¹

Introduction

When the issues to do with the teaching of reading were being considered by the Primary Curriculum Review Body (1990), one of the main conclusions in its report was that while 'learning to read' had traditionally received adequate attention, this was not the case with regard to 'reading to learn'. In other words, we had not adequately stressed the various ways in which reading skills influence other forms of learning whether in relation to other subjects on the curriculum or learning outside the formal context.

The work reviewed here returns to this question fifteen years later. I propose to tackle the issue in a number of ways. In particular, I want to look especially at the role of reading and literacy skills in a whole range of matters, especially having to do with personal consequences and more especially in terms of social consequences. What I will argue is that reading literacy has a much broader range of effects than is sometimes suspected. In particular some of the outcomes associated with school failure can in some cases be traced to the failure to learn adequate reading skills. This line of argument will lead to the conclusion that social problems that are frequently thought of as unconnected have a common origin in school failure. In turn this will lead us to look at future curriculum developments and how the argument presented here should influence these developments.

A central argument here is that, while research has frequently identified many factors associated with reading success or failure, we have considered only one half of the inter-relationship between reading and other important variables. We have thought only of those variables that we identified as causes of success and failure in reading. Thus, significant attention has been paid to parental involvement, leisure reading, socio-economic factors and personal/social factors that indeed result in success.

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My point, however, is that is the reciprocal nature of the relationship needs to be considered. What are the personal and social consequences of failure to learn to read? My view is that in many instances success in reading may result in enhancement of those personal/social factors which are sometimes thought to be causes. Reading to learn may need to be considered in a broader context.

An important consideration has to do with how conceptualisations of reading and literacy have moved on over the last decade. Modern approaches do not simply try to establish whether students are technically able to read. In the PISA study, reading literacy is defined as ‘understanding, using and reflecting on written texts, in order to achieve one’s goals, develop knowledge and potential and to participate in society’ (OECD, 2003). What I will look at are these effects on the ‘potential to participate in society’ and more especially at how reading failure impacts on the capacity of people to acquire the skills and learning that enable them to become involved in socially meaningful ways in those societal activities that make a contribution to living a full life.

Research on Reading and Personal Attributes

While we often complain about the absence of research in particular areas of education, we can have few complaints about the available information on reading achievements of Irish children. The tracking of reading scores in fifth class since the 1960s by the Educational Research Centre (with the co-operation of the Department of Education and Science), is an especially valuable source of gauging how we are faring on the central area of literacy skills (Cosgrove, Kellaghan, Forde, & Morgan, 2000). What is especially interesting is the association between a variety of social, economic and personal factors and success in reading in school. From the present perspective, the most recent study in the series found strong correlations between total test scores in reading and characteristics including participation in class, persistence in school work and capacity to work with limited supervision (p. 48). The most popular interpretation of these correlations is that the personal competencies studied enhance the students’ ability to learn. While this is likely to be part of the story, I would suggest that a further part of the explanation may lie in the way that success or failure in reading contributes to these same competencies. In other words, being competent in reading assists in the development of the ability to work with limited supervision and to persist with school work.

Transition from Primary to Post-primary Schooling

The evidence from a recently published ESRI study (Smyth, McCoy, & Darmody, 2004) on the experiences of first year students in post-primary education is of particular interest. The study followed 900 students from the time of going into first year to the end of that year, with a view to seeing what problems they experienced and what adjustments were needed. A few interesting findings emerged from this study. Firstly, it is worth noting that test scores in reading did not improve over the first years of post-primary education. In fact, only one fifth of the students in first year experienced a significant improvement in reading. It was also noteworthy that progress in reading was less good in schools where streaming occurs.

More directly relevant here is the finding that progress in reading was associated with better integration and, indeed, with other positive effects. Again, we are not suggesting that progress in reading simply caused this. Rather, it may have been a factor that interacted with other experiences to bring about a better adjustment in the crucial first year in post-primary school.

Before leaving this study it is worth mentioning the particular difficulties of students in lower streams. These students seemed to encounter particular problems with reading and this, in turn, may have been a factor in the lack of integration which they experienced. While this study did not investigate school completion, it is well known that streaming is a major contributory factor in the likelihood of dropping out of school, thus establishing a link between poor performance in reading and non-completion.

PISA Study of Reading Literacy

The PISA study (Programme for International Student Assessment) is one of the most thorough of international comparative studies in the amount of information collected and in the attention to the different levels of influence on reading achievement. In 2000, Irish 15 year-olds did remarkably well (ranking fifth of the 27 OECD countries). Indeed, only one country (Finland) had a significantly better result.

From the perspective of the present work, the findings at the individual level are especially informative. The results indicated that better reading scores were associated with a sense of success with self-regulation (students who read better judged themselves to be better at regulating/controlling their own behaviour). Furthermore, better readers had a stronger sense of academic self-esteem. As in the case of other factors associated with success with reading, it is likely that the capacity

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for self-regulation and academic self-esteem do, indeed, influence the motivation for involvement in reading. However, it is equally likely that doing well in reading may well result in an increase in ability to self-regulate behaviour. For example, a good reader can decide how they can organise their own learning and study and thus have a stronger sense of self-regulation. Nothing creates a stronger sense of control than a student knowing that they can find out things by themselves.

The evidence for the effects of academic success on self-esteem is even greater. The weight of the evidences indicates that success enhances self-esteem rather than vice versa.

The International Adult Literacy Study (IALS)

Until now we have talked about how reading affects 11 year-olds, first year students in post-primary and also 15 year-olds. The case of adults is arguably even more interesting. An international adult literacy survey was carried out at the Educational Research Centre 1994 (see Morgan, Hickey, & Kellaghan, 1997). This is sometimes called the OECD study on the grounds that some of the best known findings were publicised by that organisation. It is also well-known as the study that showed that 25% of Irish adults were illiterate – something that is clearly not the case. What it *did* demonstrate was that a substantial portion of the population was unable to handle anything beyond the most basic skills.

The findings about the life style and consequences of low levels of literacy are predictable, at least to some extent. No one is astonished at the finding that people with low literacy levels have a lower level of education (generally) and lower average earnings than those with relatively better literacy skills. However, what is perhaps surprising is the way that limited literacy skills restricted people's lives. People with poor skills had less involvement in the community and in a range of social activities. They were even less likely to be involved in sporting activities. While part of this may have been due to the association between age and literacy level (older people have lower literacy levels), what is especially remarkable is that the relationship extended even to entertainment. In other words, people with low literacy levels tended to less involvement in any experiences that might enhance their lives. It seemed that the 'positive effects' of low literacy extended only to watching television for longer.

The Prison Adult Literacy Survey

The recently completed Prison Adult Literacy survey (Morgan & Kett, 2003) was based on the tests developed for the IALS and involved the Prison Education Service in the administration of the tests. The study was carried out at the request of Department of Justice and Law Reform. Many of the main findings generated considerable interest. In contrast to the IALS, a substantial number of prisoners (around one-fifth) scored so badly that they had virtually no literacy skills, thus making it necessary to have a 'pre-level I' test on the basis that the people in question were unable to complete the screening test prior to the main testing session. In one sense it could be said that this significant minority of prisoners was 'illiterate' in the traditional sense. Another substantial group had very poor literacy skills (Levels 1 and 2). What is particularly interesting about these groups (pre-level 1, and Levels 1 and 2) was that their experience of school was of having a very low commitment, in the sense that they reported very poor attendance at school, they tended to dislike the time they spent there and they left at the first opportunity. This was not a case of them leaving when they reached the statutory age but long before that. It is not an exaggeration to say that, for many of them, schooling finished before they got started.

There are probably two factors at work in the relationship between school experiences and anti-social behaviour. On the one hand there is a direct effect arising from the skills that are not acquired in school which, in turn, results in a greater likelihood of unemployment which, in turn, increases the chances of being involved in crime. Equally important may be another pathway *viz*, the effects of commitment to school on adherence to values that do not sit easily with involvement in criminality. There is evidence that a commitment to a social institution like family, school or church has this kind of influence. Both these factors may operate in the link between school failure and criminality.

One of the most interesting features of the Prison Literacy Study was the finding that the relationship depended on the type of crime involved. Specifically, the association between low literacy levels and violent/property crime was stronger than for other kinds of crime like sexual crime. This provides particular evidence of the pathway involved.

There is no suggestion that educational factors account for all crime. Rather, what we are suggesting is that, for some, it may be an important contributory factor to the pathway eventually leading to criminality. Failure at school lessens choices and predisposes young males particularly

to go in a certain direction. Equally, there is an important suggestion as to how the rehabilitation process should begin. There is little evidence anywhere that letting young people know what prison is like, has any impact on re-offending. On the other hand, the choices that are provided through education may offer serious hope of an alternative life-style.

Other Issues on the Same Theme

The findings summarised above illustrate the effects of success and failure at reading on personal and social development. The same theme is echoed in several other areas of research. It is possible to make only the briefest references to the drift of the findings emanating from these other areas.

One concerns how the concept of self is influenced by school experiences in general, and by reading failure in particular. There are strong indications that feelings of self-efficacy are influenced by success in school and, given the importance of judgements of self-efficacy across a range of domains, this shows how the important association between school experiences and social behaviour can be brought about. Self-efficacy relates in turn to self-esteem, thus linking school experiences to this very significant area.

It is worth considering a possible link between the superior performance of girls, especially in secondary school examinations and performance differences in reading. It has been demonstrated in several studies that from an early age girls consistently out-perform boys, especially at the lower end of the performance scale, i.e., relatively fewer girls than boys are found in the bottom percentiles. What has received less attention is the effect of this difference on the learning of other subjects and eventually on examination performance. My suggestion is that at least part of the gender difference in examination performance may be due to the initial boost resulting from the advantage in learning to read.

Generational effects, that is the association of poor school performance in one generation leading to similar difficulties in subsequent generations, is a major issue in educational disadvantage. My suggestion is that at least some of these are to some extent mediated by literacy deficits. If this is the case, then interventions that focus on literacy across generations should result in substantial improvements. The evidence of family literacy programmes suggests that this is indeed the case.

Implications

There are several important implications of the findings summarised here. One concerns educational disadvantage and the appropriate emphasis

in programmes for the future. Until now many intervention programmes have focused on the resources that are available to school (e.g., improved class size, home school links). It would be equally important to consider exactly what is supposed to happen in the intervention. There is evidence that reductions in class size do not impact on the what is taught or how it is taught. I would suggest that these are crucial questions and that particular attention needs to be given to literacy as a critical factor mediating the learning of other skills.

Another implication has to do with the way interventions are presented, especially those focusing on literacy. For example, the Crinan project in the North Inner City of Dublin is concerned with giving young teenagers involved in heroin the kind of education that they never experienced. To make this happen, they need to focus on literacy, but in a way that is novel and takes into account the age and interests of the young people.

Finally, we need to think about the priorities that should exist between subjects on the curriculum. We have been reluctant to place any subject in a pivotal position and say that it is inherently more important than any other. However, the next revision of our curriculum in both primary and post-primary may need to do just that. In particular, there will be a need to distinguish between areas of the curriculum where the content is the major focus and those which are enabling by their nature and which have implications for the learning of other subjects. In my view, we will need another definition of what is 'basic', which will not mean low-level, but rather a set of skills and competencies that are basic to the learning of other subjects.

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2 “Best Leave it Between The Book and the Hearer”¹

*Finian O’ Shea*²

Introduction

We have moved a long way from the concept of ‘doing the questions at the end of the story’ and referring to it as ‘comprehension.’ In its place we have an ever expanding umbrella-term we call ‘comprehension’ encompassing such areas as oral comprehension, written comprehension, reading comprehension, visual comprehension and multi-modal comprehension to name just some. For the purposes of this paper I will limit myself to examining the comprehension of linear written text.

‘Schema Theory’ (Anderson, 1984) and the conceptualisation of the associative nature of our thinking process (placing knowledge in some sort of context for the learner) was very popular in the 1980s and seems to have fallen into disuse in more recent times. It is a concept worth re-visiting as a backdrop to the complex area of comprehension, especially in light of ‘Vygotskian’ theory now being offered as a rationale for developmental learning. Because of this we have begun to re examine the importance of teaching children strategies to monitor their understanding. Many literacy experts feel that this area of meta-cognition and meta-language is central to children developing such abilities in relation to understanding text. They maintain that while schools are good at giving children procedural knowledge they do not always take the time to make sure that they gain the conceptual knowledge to accompany it.

Comprehension in reading is the main focus of this paper. It is not a single entity, but is very specific to each particular reading act and to each context. It appears that the teaching of reading-comprehension is still somewhat of a ‘Cinderella’ within literacy education. From several studies involving classroom observation (see, for example, Chapter 4 of the National Reading Panel, 2000) research would seem to indicate that teachers are still assigning the reading material to be studied; questioning and informing students about the content of what they are reading, but with

1 Quote from *The Celtic Twilight* by William Butler Yeats (1902).

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little or no demonstration to students as to how to comprehend and learn this new information. This is quite worrying.

Other research studies into comprehension development (outlined in the National Reading Panel, 2000 p.4-6, 27) indicate that there is the need for a systematic and thorough teaching of vocabulary. Vocabulary development is seen as happening quite naturally through exposure to vocabulary-rich language for most children. But a more systematic approach to the teaching of vocabulary is also needed. For example, letting children gather words into personal word banks or dictionaries and encouraging them to celebrate their new words are some of the strategies found to promote vocabulary development.

At a more practical level, we must highlight the need for the teacher to ensure that 'the language of instruction' (what every word used by the teacher in daily teaching tasks means), is also taught! By listening to the teacher 'model' good speech and interesting sentences, and by the specific teaching of the meanings of things such as prefixes, roots and suffixes, the learner's attention is drawn to words, thus improving vocabulary. Cross-words and word games are really boring exercises but when done as a small group activity can become powerful tools to aid vocabulary development. Good 'read-alouds' (reading modeled by the teacher) are also really essential. Such 'read-alouds' should include as wide a range of genres as possible and not be limited to fiction only.

Comprehension

The definition of comprehension skills that I have used for this article is "the strategies a reader uses to construct meaning and retrieve information from a text" (Johnson 1998 p. 23). Donald Graves (in Keane and Zimmerman, 1977) discusses various possible models of how we teach comprehension. Some of them, he suggests, look at the *anatomy of comprehension* (the taxonomies which ask children questions of increasing complexity), while other models look more at the *physiology of comprehension* (those looking into the mental processing that children are using when they engage in the co-construction of meaning in order to understand a text). I am going to be so bold as to suggest a third model, in addition to those cited by Graves, to include the *soul of comprehension*, which is involved in the aesthetic and emotional realms of the child's engagement with text and, more precisely, with narrative text! This is, after all, what is at the very heart of being a reader of fiction, and I argue that our approach to supporting comprehension of narrative texts must be different somehow from

supporting comprehension of expository texts. I will briefly discuss each of these models of comprehension below.

The Anatomy of Comprehension

Benjamin Bloom, a professor of psychology, published his famous *Taxonomy of Educational Objectives* in 1956. He understood thinking to be a process taking place in increasingly complex layers, and suggested these in a hierarchy:

Knowledge	the ability to recall previous learned material
Comprehension	the ability to grasp meaning, explain, restate ideas
Application	the ability to use learned material in new situations
Analysis	the ability to separate material into component parts and show relationships between parts
Synthesis	the ability to put together separate ideas to form a new whole and establish new relationships
Evaluation	the ability to judge the worth of material against stated criteria

Educationalists adapted this hierarchy to teaching, proposing that, if questions could be asked of the student at each level of the hierarchy, then more and more complex thinking would be required by the student in order to answer them. This puts the teacher in firm control of the kinds of meaning that the child will take from the text.

There are many variations of this approach. Harold Herber (1978) had one of the more interesting variations, not only on the taxonomy but also on the whole concept of asking students questions. He saw questioning as limiting rather than expanding the student's power to think, because it focussed the student in one single direction – the search for the 'right answer.' Herber proposed that instead of questions, the student should be presented with a series of statements to consider. This way the student has to sample the text and decide whether he agrees with, or does not agree with, the statement. He felt also that this was best done in a small group setting where the student could hear the arguments 'for and against' a particular statement. It encouraged the student to consider possibilities, as well as offering role models for language usage which could be internalised to help with cognitive development.

Herber said that the statements could be offered at each of three different levels. These levels roughly correspond with the levels in Bloom's Taxonomy (1956) but are collapsed to the following three levels:

The Literal Level	statements about what the author actually said.
The Interpretive Level	statements about what the author meant.
The Applied Level	statements probing the reader's opinion of what he read.

I used this system myself for many years and with great success – it gave me a real insight into how children were engaging with what they were reading and how they were developing as readers. As a learning support teacher I was often concerned by the lack of questions that children brought to the text. Later, when I went back into mainstream teaching, I became aware that this was a feature of many 'able-readers' in my classroom also. In many instances the children did not appear to know how to frame questions beyond the literal level. One of many ways in which I attempted to compensate for this was to give children the answers and to ask them to come up with the questions. I adapted Herber's 'levels' for this and used them to elicit some quite interesting exchanges within small group discussions.

The Physiology of Comprehension

Andrew Johnson (1998) likens comprehension skills to thinking skills, in that thinking skills are part of a cognitive process which can be deconstructed or broken down into stages and therefore can be taught explicitly. Johnson follows the lead of many other writers working with non-fiction text and breaks comprehension skills into three distinct 'types of skill' – pre-reading skills, during-reading skills and post-reading skills.

Pre-reading skills

- Previewing
- Brain storming
- K.W.L. (**K**now, **W**ant to know, **L**earned) (Ogle 1986)

During-reading skills

- re-reading
- reading and pausing
- note-taking

Post-reading skills

- summarising
- retelling and creating a summary
- re-reading
- modifying the summary

Each of these sets of skills can be taught explicitly to students and then practised in order to have them interact with the text in a systematic and structured way.

The Soul of Comprehension

Johnson (1998) argues that it is necessary to use a very different approach when talking about comprehension of narrative as opposed to expository texts. He feels that 'one size cannot fit all' and that when dealing with narrative / story as opposed to non-fiction, we need to have a very different mind-set as to how we engage children about what they have read. Indeed, he declares that the primary function in reading narrative text is to enjoy the story and to allow it to lead to literate conversations between students and between students and their teacher.

Developing this concept of a 'literate conversation' is the practice of what are called 'Literature Circles' now found in many classrooms. Literature Circles have a firm educational basis and structure. According to Daniels (1994, p. 23) this 'allows for a progressive and systematic development of children's encounter with, and response to, story.' Daniels (1994, p. 54) suggests that there are twelve ingredients of Literature Circles:

1. Children choose their own reading material.
2. Small, temporary groups are formed, based on book choice.
3. Different groups read different books.
4. Groups meet on a regular, predictable schedule.
5. Children use written or drawn notes to guide both their reading and discussion.
6. Discussion topics come from the students.
7. Group meetings aim to be open, natural discussions.
8. In newly-forming groups, students play a rotating assortment of task roles.
9. The teacher serves as a facilitator.
10. Evaluation is by teacher observation and student self-evaluation.
11. A spirit of playfulness and fun pervades the room.
12. New groups form around new reading choices.

I think that it is really important that children have appropriate reading behaviours modelled for them as part of being in a literature circle. They need to be given the language of literature discussion in an age-appropriate way. The teacher needs to talk about what is being read so that the children hear how to discuss literature. The teacher does *not* need to comment on everything that is read to the children – but the teacher *can* introduce the language of discussion by referring to a text, a poem or an article that has been read.

Glenna Sloan (1984, p.150) shows just how complex that whole interaction of child and text can be. Sloan suggests ways in which we might engage children with literature in a meaningful way:

- Where and when does the story take place? How do you know? If the story took place somewhere else or in a different time what would be changed?
- What incident, problem, conflict or situation does the author use to get the story started?
- What does the author do to create suspense, to make you want to read on to find out what happens?
- Trace the main events of the story. Could you change their order or leave any of them out? Why or why not?
- Think of a different ending to the story, How would the rest of the story have to change to fit the new ending?
- Did the story end the way you expected it to? What clues did the author offer to prepare you to expect this ending? Did you recognize these clues as important to the story as you were hearing it?
- Who is the main character in the story? What kind of person is the character? How do you know?
- Are any characters changed during the story? If they are, how are they different? What changed them? Did it seem believable?
- Some characters play small but important roles in a story. Name such a character, Why is this character necessary to the story?
- Who is the teller of the story? How would the story change if someone else in the book or an outside narrator told the story?
- Does the story as a whole create a certain mood or feeling? What is the mood? How is it created?
- Did you have strong feelings as you read the story? What did the author do to make you feel strongly?

- What are the main ideas behind the story? What makes you think of them as you read the story?
- Is this story like any other story you have read or watched?
- Think about the characters in the story. Are any of them the same type of characters that you have met in other stories?

This kind of activity, suggested by Sloan, allows children to engage with the story and the characters. This engagement is the key to helping children make the transition from children-who-can-read to being children who are readers. When the child connects with the book, then the reading becomes something else. Johnson (1998 p. 26) quotes Neil Mercer as referring to this as ‘a joint construction of the narrative in that space created by the author and illustrator for the reader to live’! In that space the child is free to make the connections he wishes to make, and to live where he is – surely the very heart and soul of reading.

Conclusion

There is no such thing as a single construct that embraces all that is involved in teaching comprehension. Instead, there are many different kinds of comprehension, and children can benefit from explicit teaching in some of these, so maybe we need to think about teaching *comprehensions*. Children need to be taught to think about their reading, and they need to have ‘good reading models’ showing them how to do this! There is a very clear and definite need to teach vocabulary across the curriculum. And children need to have ‘literate language’ modelled for them and opportunities to engage in literate conversations. But above all, I feel that children need the time and opportunity to engage in their own private reading and to inhabit the world that that opens up for them.

I would like to finish with a short quotation from the award-winning American author, Katherine Paterson.

Any adequate literary diet for growing children would contain both realistic fiction and fantasy, not to speak of books of biography and non-fiction, but it would be natural for readers to have different tastes and so generally prefer one genre over another. (Paterson, 2001, p. 37)

Our role as teachers is to ensure that each child has the skills to develop as a reader of whatever genres suit his or her taste and needs.

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3 Raising Boys' Achievements in Literacy

*Eve Bearne*¹

Background

Concerns about boys' achievements in literacy, and in writing in particular, are not new. However, current government test results in England show a continuing gap between boys' and girls' achievements in literacy. The gap is widest in writing. Whilst the reasons for boys' lower test scores are complex and varied, influenced by factors out of school as well as within the classroom, nevertheless, the gap in attainment needs to be taken seriously. This paper draws on findings from two major research and intervention projects: one is a three-year project, funded by the Department for Education and Skills in England (Warrington & Younger, in press) and the other is a much smaller piece of focused research on writing carried out by the United Kingdom Literacy Association in partnership with the English Primary National Strategy (Bearne & Grainger, 2004). Whilst focusing on boys, however, neither of these two research projects takes a simplistic view. There are, of course, differences between boys as well as between boys and girls and the aim of both projects was to develop effective teaching approaches which will specifically address boys' achievements whilst also offering approaches appropriate to all learners.

Any underachievement is a proper concern for everyone involved in education - parents, teachers and children. However, it is wise not to take on generalised observations about boys, girls and literacy without asking a few questions or gathering first-hand information. Contexts differ and pupils' attitudes, motivation and achievements will be influenced by a variety of home, classroom and school-based factors. Careful observation and monitoring are essential so that teaching approaches can be developed which will support boys' achievements.

Teaching Reading or Developing Readers?

Surveys used as a basis for developing approaches to raising boys' achievements in reading often indicate a high 'fear factor': boys often said

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that they were embarrassed to read aloud in class. Typical comments from 10-year-old boys are:

... sometimes people would laugh at me if I don't know some word.

Sometimes I get confused if I read it out. Some people laugh if you read out loud. It's out of order, it makes me upset.

People make fun. I don't like to read out loud.

In general, boys make greater progress where schools take a wider view of reading, with the emphasis on what is involved in 'being a reader', rather than 'learning to read'. This can involve:

- enhanced and extended provision of books and other texts which include boys' preferences;
- buddy systems, where older boys who have 'barriers to learning' mentor younger readers;
- reading groups led by members of the school community who are not teachers, where there is emphatically no overt 'teaching' but a general sharing of reading pleasures, based on all kinds of text;
- using reading journals on a regular but not routine basis as a reflective space to record, by choice, response to texts;
- explicit attention to teachers modelling ways of responding to the meaning and content of books, not just decoding the text;
- homework which specifically encourages pupils to read all kinds of texts.

The Buddy System has particular benefits for supporting boys' confidence and motivation in reading. Typically, in the schools in the Department for Education and Skills (DfES) project in Britain, the younger boys' reading improved noticeably (Warrington & Younger, 2005 in press) and the older boys showed high motivation to work as mentors. When interviewed at the end of the project, the older boys were able to comment on reading strategies, using vocabulary which might be more associated with teacher language: initial sounds, picture clues, letter clusters, meaning, analogies with other words. For example:

Shane is more fluent now and used picture clues more. I might try to make it fun by putting it in pictures... and making it more physical to help him learn...

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They also noted the improved attitudes to reading and effects on reading behaviour:

If somebody doesn't like reading then they read more and more and they like to read.

I think reading buddies are good because there are more children in the community will learn to read and write and when you grow up you might see or hear from them saying 'Thank you for helping me in reading, and now I've got a great job because of your help.'

These gains have been replicated to a greater or lesser extent in other schools. However, it is worth noting that school organisation to support schemes like this needs to be carefully planned and supported.

The Primary National Strategy and United Kingdom Literacy Association research (PNS/UKLA), which focused on writing, generated some interesting findings about reading. Attentive reading of video texts meant that the pupils focused on the detail of both visual and verbal texts. There was increased awareness of the author's/director's point of view and greater ability to comment on authorial (and directorial) technique. There was evidence of pupils identifying characters' feelings and emotions from visual images but also closer reading of print text as more careful and attentive reading of visual text developed.

Getting Writing Right

Even in high achieving schools, writing can be a relative weakness and the low achievers are mostly boys. There is a tendency for boys to draw on visual sources for their writing and less successful writers are those who fail to translate these visual images into coherent written text (Bearne, 2002). Boys also often report dissatisfaction because they do not have time to generate ideas or to take a piece of writing through to a finished product to their own satisfaction. Those boys in both the PNS/UKLA (Bearne & Grainger, 2004) and DfES (Warrington & Younger, 2005 in press) projects who were identified as underachieving often liked writing but did not like redrafting texts or found the technical aspects of writing difficult.

As with reading, there are also factors associated with fear of failure or security more generally: This can mean that boys take fewer risks with their writing. The most successful strategies have been those which encourage a move from 'learning to write' towards 'becoming a writer' –

from an emphasis on technical skills towards a wider view of what writing can mean. This is best supported by an integrated approach to literacy teaching where reading, writing, speaking and listening contribute to the development of ideas for writing, and planning for literacy is based on longer-term units which specifically integrate the spoken (including drama) and the visual (PNS/UKLA, 2004).

Drama offers important opportunities for an integrated approach to literacy. In reading, drama helps develop understanding of the text, for example, through role-play activities to establish empathy with characters or improvisation to explore the themes of a text. These activities also support reading for inference. In writing, drama provides pupils with first-hand experiences, enabling them to write for real – or realistic – purposes. The drama process allows pupils to discuss texts with peers and teachers as well, giving them reflective opportunities before writing (Grainger et al., 2005 in press).

Some significant factors in promoting achievements in writing are outlined below regarding the principles and organisation of writing and the processes of writing:

Principles and organisation:

- Not engaging in purposeless writing – less writing, but writing which matters and which is relevant to the learners;
- The importance of ‘companionable’ writing through using response partners and group work;
- A move away from commercial schemes for teaching writing;
- A specifically genre-based approach across all curriculum areas where work in literacy sessions is consolidated in another subject in a systematic way;
- Incorporating speaking and listening, drama and role play, and visual approaches including ICT into literacy sessions;
- Covering a range of writing types but also teaching (and allowing choice of) different ways to approach writing.

The processes of writing:

- Enabling boys to experience writing without the initial constraints of attention to the secretarial features, for example, through using writing journals and opportunities for sustained writing, with time to generate ideas, time to improve text and ‘get it right’;

- An emphasis on talk and time to reflect – finding ways to talk about learning and literacy; more oral preparation for writing, with explicit attention to the structures of texts and opportunities to tell stories, give explanations or instructions, debate issues, before having to write narrative, procedural or persuasive texts;
- Deliberate use of visual texts and visual approaches to writing and explicit discussion of how these relate to writing.

The Importance of Speaking and Listening

In a general way, speaking and listening have for some time been identified as important for writing (Corden, 2000; Alexander, 2003). However, except for Safford et al., (2004), Barrs and Pidgeon (2002), and Frater (2000), little has been written in any detail about the role of talk in specifically promoting boys' achievements in literacy. The role of talk in promoting reading improvement has been even less well documented. Whilst opportunities for speaking and listening, including drama, are recognised as useful in promoting increased confidence and fluency in literacy, there are dangers in over-generalising about the role of talk. It is not just the case that 'encouraging boys to talk more' will support their literacy. It is important to identify the different types of talk which can support confident literacy. In the first place, the teachers' use of language is essential in providing a model for pupils to extend their spoken repertoires. Specific approaches to speaking and listening in the classroom which contribute to improvements in boys' literacy include:

Modelling the language of texts and of learning: Teachers automatically using specific terminology about texts and language as well as offering ways of thinking through their use of language, for example, *Why has the author chosen to use those words?*; and *What might be a way forward for this group?*

Thinking aloud: Teachers sharing their thought processes and giving their own opinions, for example, *I feel that this is more effective because....* and *I can see that working....*

Asking questions – teachers: Questions from teachers which are work-focused (rather than behaviour-focused) and vary between those requiring a precise response and those inviting reflection or speculation. This can be enhanced by the expectation that not everyone will have to answer all the time and that there will be chances for extended expression of opinion.

Asking questions – pupils: This was observed as a significant contributor to boys' engagement with learning. There are gains in learning where

pupils are encouraged to formulate their own questions about learning and opportunities are created for pupils to ask questions of each other and the teacher. Teacher questioning acts as a model for pupils' questions.

Talk during literacy sessions: Deliberate planning for inclusion of all aspects of speaking and listening in each lesson.

The schools where boys are most successful as learners and in literacy are those where they have had consistent opportunities for different kinds of talk from very early in their schooling. This includes

- *Informative* talk where pupils are expected to explain their ideas, knowledge or opinions, which helps them to realise what they know and gives a structure for understanding and writing informational texts.
- *Formative* talk – reflective, exploratory and negotiatory talk helps shape and develop ideas – particularly in group work. Working and learning together are greatly enhanced when groups know the language of negotiation and cooperation.
- *Performative* or presentational talk is particularly important. Although at first some boys might feel exposed by the presentational element of lessons, in a supportive and challenging environment, a culture is established in which it is cool to be seen publicly as good at something, and where even if you might be feeling insecure inside, there can be satisfaction in taking on a challenge.

Teacher Development

In both projects, where there has been greater emphasis on integrated approaches to planning and a generally more creative approach, teachers note renewed personal satisfaction and pleasure in their literacy teaching. They increase their pedagogical knowledge, becoming more prepared to take a longer term, less immediately interventionist approach and listening more to what their pupils bring to their literacy learning. Literary and text knowledge also increased as teachers sought to examine more fully a variety of filmic texts and to construct new texts through a variety of drama conventions. Many developed the skill of weaving these together to make meaning in imagined contexts. Through examining features of texts, such as settings, themes and character in the context of a film or of a drama activity, some of the teachers as well as the children found they were able to extend their literary insights across visual, dramatic and print texts. These insights emphasise the importance of the teacher's role, specifically:

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- Teachers as readers, writers, speakers and listeners: Not only teachers modelling different forms of writing but also writing for pupils and alongside them in the classroom;
- Teachers being prepared to take risks in bringing more creativity to literacy sessions;
- Teachers having a clear sense of the levels and experience of all pupils and using this information to move learning forward;
- Teachers having some sense of how literacy is perceived and supported at home.

Conclusion

The success factors above are related to the coherent management of learning at whole school and classroom levels. They involve an emphasis on longer term learning, *not* teaching alone. This includes establishing a culture which values learners as individuals within an ordered learning environment with clear boundaries and high expectations. Such a culture involves – and creates – trust between children and adults. In the classroom, a key factor would be managing mixed ability teaching with a very clear view of pupils' achievements and progress and knowledge of how to move their learning on: in other words, informed differentiation.

In drawing together the different findings of the two projects it is clear that there are no easy answers. Although the schools involved in both projects are not offering quick fixes, their work does give some useful pointers for ways forward. They highlight the crucial importance of an integrated approach to literacy and learning and one which specifically includes speaking and listening as a central feature.

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4 Supporting the Emergent Reader Through Research-Based Integrated Early Literacy Instruction

Martin Gleeson¹

Introduction

The process of learning to read is not natural or easy for most children, but a complex linguistic achievement requiring effort and incremental skill development (American Federation of Teachers, 1999). However, the past three decades have seen major advances in the quantity and quality of scientific research into the psychological processes involved in learning to read (Stanovich, 2000), while converging evidence from a wide variety of sources has enabled a growing consensus to emerge regarding key elements in effective early reading instruction. (Shaywitz, 2003).

Observations of children's early reading behaviours have enabled researchers to identify incremental stages of word reading development (Frith, 1985; Ehri, 1999), based on children's growing mastery of the alphabetic principle. Evidence from fMRI images indicating patterns of brain activation in the recognition, storage and retrieval of words substantiate this theory. Shaywitz (2003) suggests that the novice reader recognises words in a slow analytic fashion through activation of the parieto-temporal system in the left hemisphere of the brain. The efficient achievement of this task relies on a number of related processes working simultaneously. As a reader fixates on a word, each individual letter activates its own recognition unit in the reader's memory. In the early stages of reading development these will require phonological translation into spoken words. However, with increased exposure to print, the most commonly occurring letter clusters will be processed with increasing automaticity as inter-letter associations are strengthened. This leads ultimately to the automatic recognition of syllabic patterns and whole words which are subsequently stored in the occipito-temporal system, ready for instant retrieval.

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Consequently, the emergent reader requires frequent exposure to words in a variety of contexts to consolidate this newly acquired skill in the process of accurate and fluent word recognition. This is greatly facilitated through explicit instruction by knowledgeable teachers, to surmount the orthographic avalanche facing the inexperienced reader.

Elements of Effective Early Reading Instruction

The challenge for researchers, policy makers and practitioners alike is the design of appropriate early reading instruction based on insights gained from rigorous research. Fortunately, there is converging evidence from recent influential reports (Snow, Burns & Griffin, 1998; National Institute of Child Health and Human Development, 2000; International Reading Association (IRA), 2000; Center for the Improvement of Early Reading Achievement, 2001) and authors of international repute such as Pressley (2002), Neuman and Dickinson (2002) and Mandel-Morrow *et al.* (2003), indicating the key elements of effective early reading instruction. These include:

- Alphabetic knowledge including names, shapes and sounds of letters
- Phonological knowledge including awareness of syllables, onset-rime and phonemes
- Opportunities to engage in invented spelling through the process of emergent writing
- Systematic phonics instruction
- Frequent and intensive opportunities to read connected text
- Range of appropriate strategies to develop accuracy, fluency and comprehension
- Opportunities to listen to stories rich in vocabulary to improve listening comprehension skills and become increasingly aware of more complex syntactic patterns
- Involvement of parents in children's early reading development
- Appropriate assessment

Word Identification in the English Language Curriculum

The International Reading Association has emphasised the crucial role of knowledgeable teachers, using a range of appropriately designed instructional approaches, as the most important variable in effective primary prevention of reading difficulties (IRA, 2000). In a review of early reading programmes in high poverty schools, Adler and Fischer (2001)

identified effective, powerful and balanced reading instruction as the key to successful early reading achievement. Shiel (2002), in a review of reading reform efforts in England and Ireland, highlighted the essential contribution of theoretical knowledge among the teaching profession as crucial to effective reform, while Collins Block, Oakar and Hurt (2002) cite several recent studies confirming the relationship between teacher expertise and improvements in reading instruction. However, the *English Language Teacher Guidelines* (NCCA, 1999), while reflecting many elements of effective early reading instruction, are somewhat at variance with scientific research on the crucial skill of word recognition. Acknowledging that reading is a complex skill (NCCA, 1999) dependent on efficient word recognition, the guidelines identify the complementary roles of semantic, syntactic and grapho / phonic cues in this process. The significance of the child's oral language development in the application of semantic and syntactic cues is illustrated with appropriate examples. The contribution of phonological awareness training to children's letter / sound knowledge is explained with particular emphasis on the role of onset-rime knowledge as an efficient word identification strategy. The guidelines identify 37 rimes that enable the emergent reader to gain access to 500 primary level words. However, the impact of phonemic awareness training is completely overlooked, apparently on the basis that it is easier to segment "syllables into parts greater than a phoneme" (NCCA, 1999).

The omission of a detailed programme of phonemic awareness instruction, given its prominence in the research literature during the previous decade (Adams, 1990; Ball & Blachmann, 1991; Nation & Hulme, 1997; Juel, 1988; Stanovich 1986) is difficult to understand. Perhaps it is assumed that the translation of sound to print undertaken in the shared writing process might provide sufficient exposure to phonemic awareness training. If this is the case, then one might reasonably expect this process to lead naturally into children's emergent writing through the process of invented spelling. However, the impact of phonemic awareness training and opportunities to develop increasing insights into the internal structure of words through the process of invented spelling are not recognised in the guidelines. Furthermore, while knowledge of letter / sound relationships is encouraged, it seems as if this is to be achieved through onset-rime knowledge rather than systematic phonics instruction. This is surprising given the recommendations regarding systematic phonics instruction in every major report on reading instruction from *The First Grade Studies* (Bond & Dykstra, 1967) to *Preventing Reading Difficulties in Young*

Children (Snow *et al.* 1998). The recommendations regarding the application of letter/sound associations to confirm predictions are not consistent with advances in eye movement studies which indicate that fluent readers fixate on virtually every content word in text and that visual information is carefully analysed in the process of rapid word identification. (Rayner & Pollatsek, 1985 cited in Adams, 1990).

The development of strategies to promote accuracy and fluency as part of an integrated programme of early reading development is not included in the guidelines, despite its prominence in reading research as a fundamental element of effective reading instruction. Interestingly, one of the strategies recommended in the research literature for developing fluency – *Readers' Theatre* – is included in the section dealing with response to fiction (NCCA, 1999), but not in the context of providing much needed motivation and practice at a success level for the emergent reader. Apart from the recommendation to use text that contains natural language, little consideration seems to have been given to the most appropriate form of text for beginner readers. Although a number of activities have been identified to enable parents to support their children's oral language development, the guidelines lack specific recommendations regarding the involvement of parents in their children's early reading development. While early identification of children experiencing reading difficulties is recommended (NCCA, 1999), the lack of emphasis on phonemic awareness training means that one of the most salient indicators of subsequent reading difficulty may not be assessed. Furthermore, in the absence of samples of a child's invented spelling, based on his/her writing portfolio, a significant indicator of early word reading development cannot be observed.

In the interest of balance, it should be noted that the National Council for Curriculum and Assessment, charged with the implementation of the Primary School Curriculum, has addressed some of these issues regarding early reading instruction, through the work of a subsidiary body, *The Primary Curriculum Support Programme*. The web site of this organisation has addressed some of the concerns regarding phonemic awareness and includes a comprehensive article on early writing development, but lacks a rationale regarding the integration of key instructional elements into a coherent early reading programme.

Programme of Research-Based Integrated Instruction

Given the instructional implications arising from the scientific literature and the lacunae identified in the English Language Curriculum,

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the author presents research demonstrating the impact of a seamless programme of early literacy instruction on the reading development of 24 children from school entry to the end of first class. This integrated programme includes reading to children; phonological awareness training; systematic phonics instruction; emergent writing; meaningful reading experience with connected text; fluency development; and parental involvement. It was hypothesised that an integrated programme of early literacy instruction could accelerate the reading development of all children, while simultaneously providing primary prevention for the weaker readers, thus enabling all children to progress at their own individual rates in a supportive environment.

As a recurring finding in research identifies phonological awareness skills and letter knowledge at school entry as the most significant predictors of subsequent reading success (Cowen, 2003), it was decided to establish children's prior literacy knowledge through individual assessment in the following areas:

- Letter knowledge
- Phonological Awareness (PhAB, Frederickson *et al.* 1997)
 - Identification of words as units within sentences
 - Syllable Blending
 - Nursery Rhymes
 - Rhyme Detection
 - Rhyme Generation
 - Phoneme Blending
 - Phoneme Segmentation
- Concepts About Print

The group, consisting of 12 boys and 12 girls with a mean age of 54 months, were randomly selected at school entry and displayed:

- Low levels of alphabetic knowledge
- High levels of accomplishment in syllable blending
- Low levels of nursery rhyme knowledge
- Difficulty in the identification, detection and generation of rhyming words
- Inability to blend and segment phonemes
- Little knowledge of the directionality of print, concepts of word, letter and basic punctuation.

The elements of their instructional programme in the first year of the intervention (Junior Infants) were:

- Alphabetic Instruction
- Phonological Awareness Training
- Nursery Rhymes
- Explicit Instruction regarding Concepts About Print
- Shared / Emergent Writing
- Reading to Children
- Home / School Reading Partnerships

Integration of Programme Elements in Year 1

This integrated approach to early reading instruction endeavours to promote the relationship between letter / sound knowledge, phonological awareness training, emergent writing and meaningful reading experience in a coherent manner leading to increasing awareness of the internal structure of words. Writing becomes the major vehicle for the integration of these elements. Exposure to the process of shared writing supports the child's emerging letter / sound knowledge and concept of a word, while simultaneously developing the child's segmentation skills in a meaningful manner. These concepts are further developed in the shared reading experience of big books, charts, nursery rhyme posters and early reading experience with patterned text. The child's growing awareness of word boundaries enables him / her to fixate on individual words, which when complemented with phonemic awareness training and emergent writing enables the development of a systematic understanding of the orthographic structure of the language. Explicit instruction in the identification of initial, terminal and medial sounds in words combined with phoneme segmentation and opportunities to engage in emergent writing enable the child to gain incremental knowledge of the internal structure of words. This approach encourages individual development as all the children will not achieve the same level simultaneously, while the establishment of home / school reading partnerships, which provide reading practice at a 95% success level on a daily basis, allow for individual development with text tailored to the individual child's age and stage of reading development. This flexible approach contributes to the accelerated reading development of many children, while ensuring primary prevention for the weaker children through access to essential research-based early literacy instruction.

The instructional programmes for years two and three continue to emphasise this integrated approach and are summarised in Table 1.

TABLE 1: INSTRUCTIONAL PROGRAMMES FOR YEAR 2 AND 3

Programme Year Two	Programme Year Three
Alphabetic Instruction	Systematic Phonics Instruction
Phonological Awareness Training	Introduction to the Writing Process
Reading To Children	Systematic Spelling Instruction
Emergent Writing	Basal Reader with accompanying workbooks
Basal Reader with accompanying workbooks	Reading To Children
Home / School Reading Partnership	Home / School Reading Partnership

The effectiveness of the programme was assessed through a range of diagnostic and standardised tests identifying children’s attainment in word identification, fluency and comprehension skills. Detailed information of their progress in letter knowledge, phonological awareness skills and concepts of print during their first year in school indicated:

- High levels of letter naming and letter / sound knowledge;
- High levels of proficiency in nursery rhyme knowledge, rhyme judgement, rhyme detection and rhyme generation skills;
- Significant advances in phoneme blending and segmentation skills;
- Increased understanding of concepts of print and basic punctuation.

On completion of the second year of the intervention a detailed assessment of the children’s development in word identification, fluency and comprehension was assessed using a range of standardised tests (Table 2).

TABLE 2: MEASUREMENT OF SKILL AND INSTRUMENTS(YEARS 2-3)

Measurement of Skill	Instrument of Measurement
Word Identification	NARA II – Accuracy
	Non-Word Reading Test
Comprehension	NARA II – Comprehension
	MICRA – T Level 1
	DPRT – Level 1*
Fluency	NARA II - Rate

* Administered in Year 3 only.

The children’s proficiency at word identification is illustrated by the high mean scores recorded for accuracy on the Neale Analysis of Reading

Ability (1999) and by their ability to decode non-words as depicted in Tables 3 and 4 respectively.

TABLE 3: NARA II – ACCURACY – YEAR 2

N	Mean	SD	Min	Max
20	107.1	11.2	86.0	128.0

TABLE 4: NON – WORD READING TEST - YEAR 2

N	Mean	SD	Min	Max
19	105.8	5.7	93.0	114.0

The high mean scores recorded for word identification are reflected in similarly high scores for comprehension, (see Table 5), indicating an ability to understand connected text. It should be borne in mind that the average age of the class at this stage was 6.5 years.

TABLE 5: NARA II – COMPREHENSION – YEAR 2

N	Mean	SD	Min	Max
19	106.2	12.4	77.0	123.0

As can be seen in Table 6, the lower mean score for rate of reading can be explained by the children’s word analysis skills, which had not yet reached the level of automaticity.

TABLE 6: NARA II – RATE – YEAR 2

N	Mean	SD	Min	Max
20	101.3	9.1	84.0	114.0

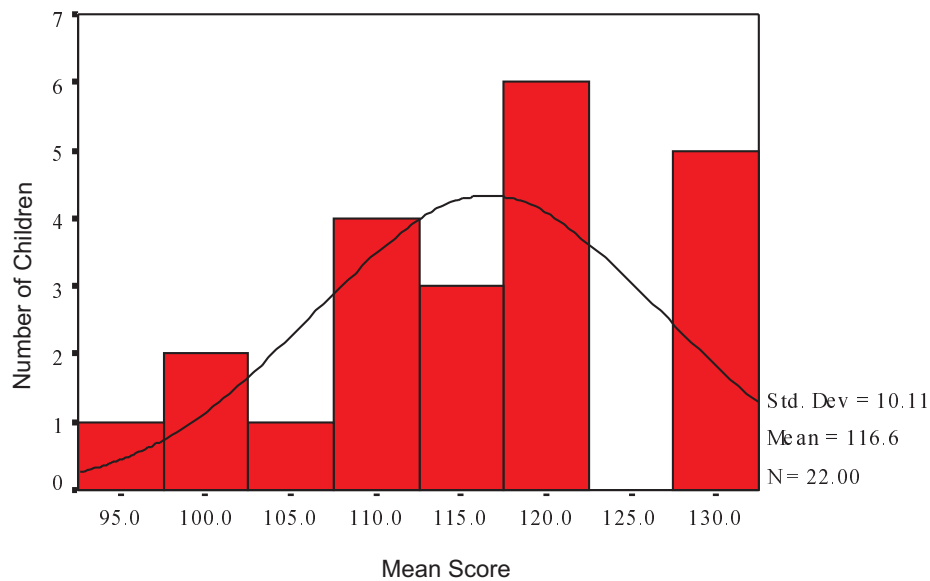
The results from NARA II - Year 3 are summarised in Table 7.

TABLE 7: NARA II – YEAR 3

	N	Mean	SD	Min	Max
Accuracy	23	101.4	10.4	75.0	121.0
Comprehension	23	100.0	8.8	81.0	115.0
Rate	23	109.7	11.5	83.0	130.0

The children’s overall proficiency at reading was endorsed by their high mean score on Micra-T level 1 (Wall & Burke, 1991) (see Figure 1). It should also be noted that the lowest score recorded for the group was in the fortieth percentile, thus emphasising the effectiveness of the programme as an agent of prevention.

FIGURE 1: MICRA T LEVEL 1 – YEAR 2



Given the rate of progress achieved by the children in the first two years of the intervention in terms of word identification, fluency and comprehension, it is not surprising to observe continued improvement in

reading development on completion of the third year, as the results of the following standardised tests illustrate (see Figures 2, 3, and 4).

FIGURE 2: MICRA-T LEVEL 2 – YEAR 3

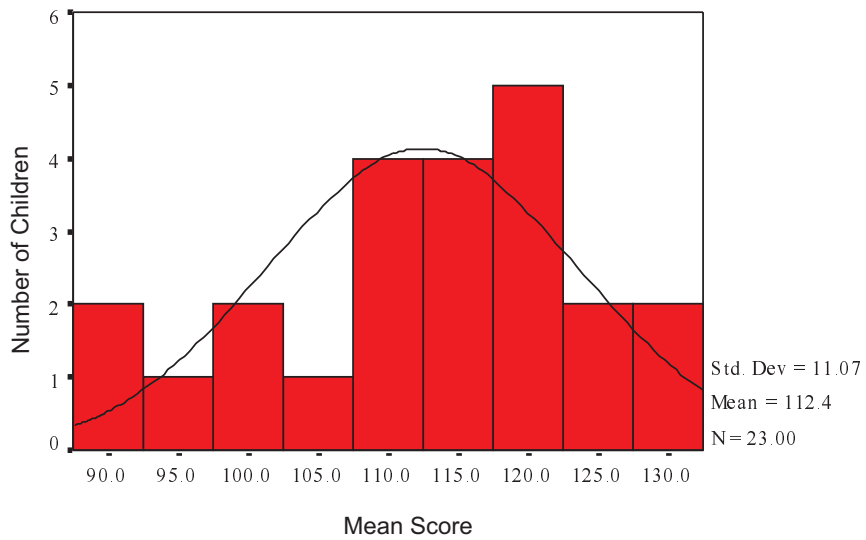


FIGURE 3: NON-WORD READING TEST – YEAR 3

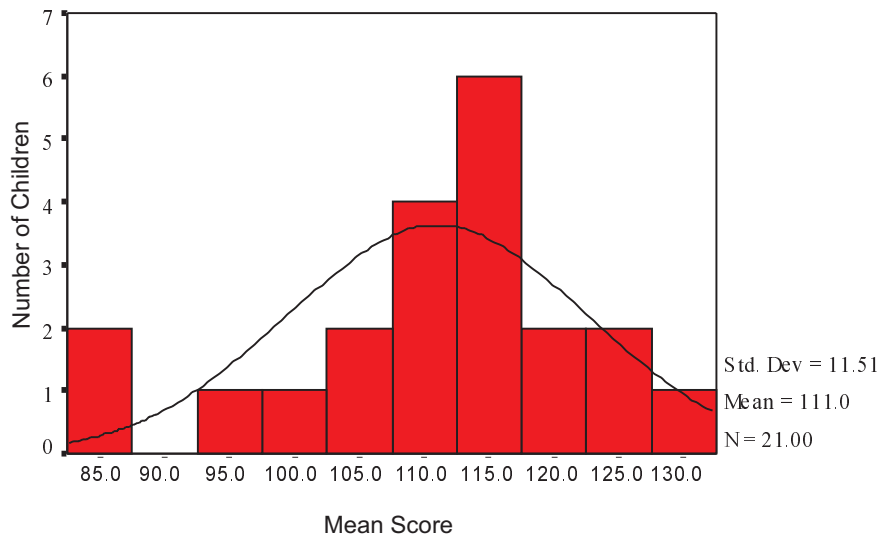
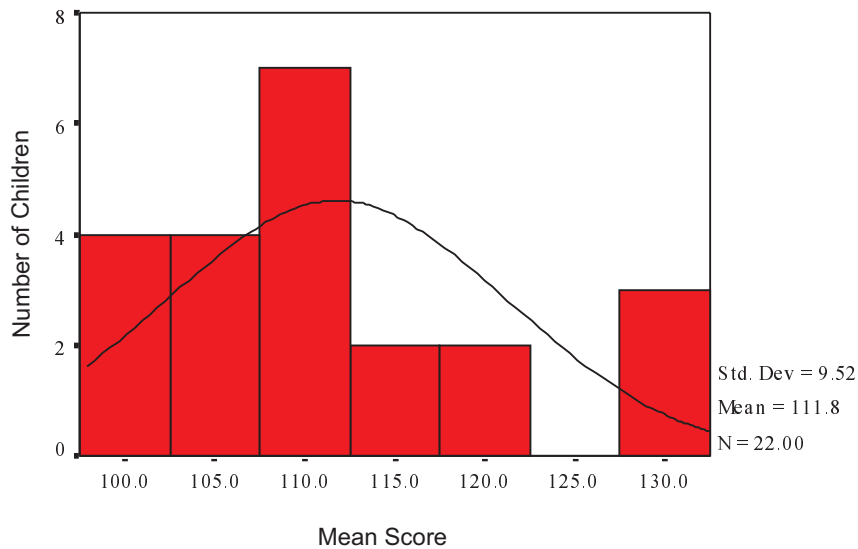


FIGURE 4: DRUMCONDRA PRIMARY READING TEST LEVEL 1 – TOTAL READING - YEAR 3



Conclusion

This study evolved in response to the experiences of the researcher as a learning support teacher, during which time an appreciation of the significance of effective early reading instruction was gaining momentum in the research literature. The elements of effective instruction were identified as an integrated programme of alphabetic instruction, phonological awareness training, emergent writing, meaningful reading experience with connected text and appropriate parental involvement. The results of this longitudinal study produced some interesting data, in an Irish context, on the impact of such instruction on the individual attainment levels of the participants. Notwithstanding these achievements, the limitations of the study suggest that these findings are provocative rather than definitive. Such limitations include the sample size, the homogenous nature of the group and the high levels of parental support afforded to the participants. Nevertheless, some noteworthy findings emerged in response to the research question. Throughout the intervention, the classroom of the

experimental group reflected high levels of engagement, with children purposefully involved, working at the edge of their competencies on a range of literacy tasks. Analysis of the literacy practices observed and early reading attainments generated, suggests a number of instructional implications for effective practice:

- The necessity for explicit phonological awareness training, particularly at the level of the phoneme.
- The seamless integration of phonemic awareness training and invented spelling in the first year of instruction.
- The reciprocal nature of early reading and writing instruction.
- An appreciation of the diagnostic significance of children's phonemic awareness knowledge and emergent writing development on completion of junior infants as key indicators of word identification skills.
- The development of one-to-one correspondence between spoken and written words to stabilise concept of a word and allow for analysis of constituent letters.
- The purposeful involvement of parents in their children's early reading development.
- The provision of meaningful reading material with patterned language and decodable text to support children's word identification and fluency skills.

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5 Phono-Graphix: Rethinking the Reading Curriculum

Helen McLernon¹, James Ferguson and John Gardner

Introduction

Alberto Manguel's (1996) description of learning to read is compelling: 'At one magical instant in your early childhood, the page of a book - that string of confused, alien ciphers - shivered into meaning. Words spoke to you, gave up their secrets; at that moment, whole universes opened. You became, irrevocably, a reader.' Unfortunately, not everyone experiences such a wonderful discovery. For many children, the complex task of learning how to read poses no problems. For others, progress may be slow and for a small number, learning to read seems to present significant difficulty. For this latter group, the string of confused alien ciphers can be very slow to shiver into meaning. For such children, there is nothing magical about learning to read; rather it may be viewed as a daunting and demoralising experience.

According to Brooks (2003), the case for the systematic teaching of phonics in the process of learning to read has been made strongly in recent years. Such an approach is viewed as helping children understand the code of black marks on a page, enabling them to assemble these into words and sentences that provide meaning. Mastery of this two stage process addresses both sides of the reading coin: decoding skills and comprehension. Essentially it creates the opportunity to help children learn to read and consequently read to learn.

Of the various approaches, Phono-Graphix claims to represent a 'shift' in phonics teaching, involving the implementation of a more logical, speedy and effective approach. As Figure 1 sets out, the programme is divided into three levels: 'basic code', 'advanced code' and 'multi-syllable management'. Within each level, specific concepts are introduced and the skills of segmenting, blending and phoneme manipulation are developed and reinforced.

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The central theme in this paper is to clarify what this ‘shift’ in teaching entails, especially in relation to children experiencing reading difficulties. On the surface, determining this can be difficult as Phono-Graphix uses the same letters and sounds as traditional phonics. However by delving into the intricacies of approach inherent in Phono-Graphix, a clearer understanding of the distinguishing features becomes apparent. Four key differences need examined:

- teaching letter names
- teaching a balanced approach to decoding words
- teaching letter-sound correspondences
- teaching a sight vocabulary.

TABLE 1: OVERVIEW OF THE PHONO-GRAPHIX PROGRAMME

Level	Main concepts taught	Skills
The basic code	The English written code is a sound based code – letters are pictures of sounds. Focus is on one-to-one correspondence. The word sequence follows – CVC (mop), VCC (end), CVCC (lost), CCVC (frog), CCVCC (trust).	Blending Segmenting Phoneme manipulation
The advanced code	Two or more letters can represent a sound such as <u>oa</u> (coat) or <u>igh</u> (high). Variation exists in the code, whereby most sounds can be represented in more than one way (<u>oe</u> in <u>toe</u> , <u>oa</u> in <u>boat</u> , <u>o</u> in <u>no</u> and <u>ow</u> in <u>blow</u>). There is overlap in the code, whereby some components can be represented by more than one sound such as <u>ow</u> in <u>how</u> and <u>ow</u> in <u>snow</u> .	Blending Segmenting Phoneme manipulation
Multisyllable management	Reading multisyllable words involves blending sounds into syllables and then the syllables into words. Spelling of multisyllable words works on the reverse of this. The syllables in the word are identified and then each syllable is segmented. Eight ‘special endings’ are taught such as <u>fraction</u> (<u>tion</u> = shun), <u>delicious</u> ’ (<u>ciou</u> s = shus).	Blending Segmenting Phoneme manipulation

Phono-Graphix - A 'Shift' in Approach

Teaching Letter Names

The first key difference between Phono-Graphix and other approaches involves the teaching of letter names. In line with the concept that the English written language is a sound based code and that letters are pictures of sounds, Phono-Graphix teaches the sounds only. McGuinness and McGuinness (1998) argue that having to learn two things for one symbol, the letter name and the sound, causes confusion and results in children experiencing difficulties differentiating between the two.

The idea of teaching letter sounds in the context of words is not the norm in many schools. The National Literacy Strategy (DfEE, 1998), which schools in Northern Ireland are invited to follow if they wish, recommends teaching letter names and letter sounds. While no explanation is offered as to the rationale behind this recommendation, a study by Hohn and Ehri (1983) provides some evidence as to why this approach may be favoured. Two groups of six pre-readers, all of whom could name letters but not produce the sounds, were taught segmentation skills using either letter tokens or blank tokens. The third group received no such teaching. The positive results obtained from the letter group, regarding segmentation skills and also ability at remembering sounds, led Hohn and Ehri (1983) to conclude that rather than confusing or hindering progress, letter-name knowledge facilitates remembering the sounds.

In the Hohn and Ehri (1983) study, the participating children could name letters prior to being taught letter sounds. Generally, as Adams (1990) comments, children who have few problems learning letter names have been introduced to them at home. Letter names are thus internalised long before sounds are introduced, which can help prevent confusion. Children with limited pre-school experience of letters are more likely to encounter problems distinguishing between letter names and sounds. To combat this, like McGuinness and McGuinness (1998), Solity (2003, p20) maintains that because 'teaching letter names is a redundant skill in both early reading and spelling', these should be introduced after children are fluent in applying the sounds.

In an Australian longitudinal study investigating the basic literacy skills of 615 pupils aged between 4 and 15 years, Harrison, Zollner and Magill (1996) highlighted confusion between the names and sounds of letters as one of four kinds of letter-sound error. This confusion, which was found to persist throughout primary school, was seen to have a significant

impact on children's ability to blend sounds to produce words. After four years of schooling, approximately 50% had problems blending three letters into a syllable.

Investigating the effects of using different literacy instruction, Ball and Blachman (1991) also found that despite each group having equal letter-name knowledge, this did not impact on reading skill. For seven weeks, 90 five-year-old children, divided into three groups, received 20 minute literacy sessions, four times each week. A common feature between the phoneme awareness group and the language activities group was the learning of nine letters and phonemes. The control group participated in normal classroom activities. On a reading test consisting of two and three-sound regularly spelt words using the nine letters, the phoneme awareness group outperformed the other two groups.

In contrast to these findings, O'Connor, Jenkins, Cole and Mills (1993), comparing the effects of teaching one group of children letter names and sounds and another group letter sounds, reported no significant difference in achievement at the end of the year of support and one year after support ended. The only difference was that the letter sounds group performed better in spelling. It is possible to argue that this in itself points to the benefits of focusing on letter sounds.

From the research evidence, it is understandable why McGuinness and McGuinness (1998) view the most important part in learning to read as sound and not letter-name knowledge. Such an assertion is based on the belief that focusing on the sounds and teaching these in the context of words rather than in isolation, helps children associate the symbols with the sounds more quickly, because they are actively using them to make words. This enables children to see the purpose of knowing and using the sounds of their language. From our experience of teaching children with reading difficulties, adopting this approach has been advantageous in reducing confusion and facilitating faster progress in reading and writing.

A Balanced Approach

The second key difference is concerned with the idea of using a balanced approach to assist with the decoding of words. In our experience, the teaching of reading in many schools favours this interactive model, whereby a combination of whole-language and phonic approaches are used. The National Literacy Strategy (DfEE, 1998, p4), as well as proposals for the revised Northern Ireland Curriculum (CCEA, 2002), underlines the importance of teaching children to 'use the full range of

search lights to tackle texts from individual words upwards and from the text downwards.’

Phono-Graphix does not acknowledge this idea of ‘balance’. Children are taught simply to use their knowledge of the code to identify unfamiliar words. The efficacy of encouraging children to use pictures, context or the initial letters of words as decoding strategies is questionable. For those children who have reading difficulties, employing such strategies may simply herald an open ticket to use any word that comes to mind. Based on personal experience, few children with reading difficulties substitute words correctly or meaningfully. Harrison et al (1996) reported that as a result of relying on initial letters or initial and final letters to identify words, approximately 80% of eight-year-old children within their study demonstrated inaccurate word guessing, when asked to read phonetically regular words containing one to four syllables in length. Similar errors were being made four years later by 60% of the children, demonstrating how such flawed strategies can become established and difficult to eradicate.

It is important that children are not encouraged to think that substituting words or guessing is acceptable. Encouraging this strategy, even alongside others, may result in children simply failing to decode words systematically and hence failing to comprehend written text. The emphasis in Phono-Graphix is that successful reading involves actively decoding words and not guessing them. Encouraging children, especially those struggling with learning to read, to adhere to this singular strategy may also reduce confusion regarding whether to employ picture cues, context cues or sounds when identifying unfamiliar words. This can be empowering for children as they know exactly what is required from them.

Teaching Letter-sound Correspondences

The third key difference between Phono-Graphix and other approaches involves the teaching of letter-sound correspondences. This issue has been characterised by the polarisation of two approaches: synthetic and analytic. It is now possible to argue that the introduction of Phono-Graphix creates a third dimension to this conflict.

The synthetic approach is an accelerated form of phonics, which teaches children at the very beginning of reading instruction to pronounce sounds in isolation and then blend these to produce the word. In contrast, analytic phonics starts with the whole word and highlights spelling

patterns, which are then split into smaller parts, such as onset and rime. These rimes help children learn to read and spell by the process of analogy.

Phono-Graphix is often perceived as being similar to synthetic phonics, from its promotion of decoding words sound by sound and its recommendation to teach quickly. McGuinness (2004) stresses that Phono-Graphix is 'definitely not a phonics programme of any sort', because it does not teach phonic rules or letter names and avoids teaching that letters 'make' sounds, emphasising instead that they represent sounds. The twist in Phono-Graphix, as McGuinness (2004) suggests, is that rather than teaching the sounds, it teaches children 'how to discover the ways to show the sounds.'

A number of recent studies have investigated using synthetic and analytic phonics. Watson and Johnston (1998), in a longitudinal study, compared the performance of approximately 300 Scottish Primary 1 children, divided into three groups and exposed to either a synthetic, analytic or similar programme to analytic phonics. After receiving 16 weeks of instruction for 20 minutes a day, the children in the synthetic phonics group were reading and spelling seven months above chronological age, and were a similar amount ahead of the children taught by the two analytic programmes. Johnston and Watson's (2005) final report of this study reveals the continuing benefits of synthetic phonics. These findings have been highly publicized and may have far-reaching effects on the debate about reading in the United Kingdom.

Santa and Høien (1999) reported similar benefits from incorporating the onset and rime component in an early intervention programme for children with reading problems. When tested at the end of Grade 1 and the beginning of Grade 2, the reading, spelling and sight word recognition of those children who received instruction in this approach surpassed those in the control group. Santa and Høien (1999) maintained that this resulted from the children being able to transfer their knowledge of spelling patterns to aid recognition of unfamiliar words with the same ending such as *sand*, *land*.

McGuinness and McGuinness (1998) argue that the onset and rime approach teaches children not to decode the whole word. If the next word is to be similar to the last two sounds in the previous word such as 'pin', 'win', then children tend to focus on the initial sound of the next word. This encourages children to think that it is only initial sounds that are important and results in guessing the remainder of the word.

Within Phono-Graphix, rime patterns are also viewed as confusing and demanding, due to children having to learn the letter-sound

correspondences, consonant clusters (br, fl) and blend combinations (ip, ent), approximately one thousand in total. We concur with Deavers, Solity and Kerfoot (2000) that this places huge demands on children's memories and inevitably many may be forgotten. In contrast to the onset and rime approach, after teaching CVC words, Phono-Graphix teaches VCC/CVCC words followed by CCVC words and teaches these as adjacent consonants. This shows children what they can do with a little knowledge. For example, if children can produce the sounds for 's' and 'l', they do not need to relearn these as 'sl'. Carnine, Silbert and Kameenui (1997) question the onset and rime sequence and recommend a similar order to that proposed in Phono-Graphix. Solity (2003) also comments that this sequence increases generalisation and reduces memory load.

Clearly, opinion is divided regarding the benefits of analytic and synthetic approaches. Adams (1990) and Brooks (2003) interpret the experimental evidence as favouring synthetic phonics, because children taught using this approach made faster progress. Evidence of the effectiveness of Phono-Graphix is more difficult to find, given the limited research available. A study carried out in Bristol involving reception classes provides positive findings. One group of children received Phono-Graphix instruction, another group received Phono-Graphix supplemented with onset and rime and teachers delivering the National Literacy Strategy taught the third group. Dias and Juniper (2002) concluded that while all the children had made similar progress in phoneme awareness, the children taught purely Phono-Graphix had better blending and segmenting skills and their ability to generalise these skills was superior when presented with unfamiliar words. More research is needed to further clarify the effectiveness of Phono-Graphix, both as a general teaching programme and as an approach for helping children experiencing reading difficulties.

Reading Books and Developing a Sight Vocabulary

The fourth key difference between Phono-Graphix and other reading approaches relates to the provision of reading books and encouraging children to memorise high frequency words. The claim made by McGuinness (1998) that children should not be presented with books until they are competent with a number of CVC words has major implications for schools. Although encouraging the reading of stories to children, McGuinness (1998) maintains that children should not be given reading books containing words they cannot decode.

Johnston and Watson (1997) lend support to this claim in a study based on an intensive eight-week synthetic phonics programme, involving daily one-hour teaching prior to introducing reading books. They demonstrated that test results from March of the first year revealed word reading to be 16 months ahead of chronological age. In their subsequent study, Watson and Johnston (1998) introduced reading books at the normal time and adopted a slower pace of instruction. Following 20 minutes of daily instruction in synthetic phonics for 16 weeks, results revealed a seven-month advance on chronological age. Although the initial study produced better results, satisfactory gains can be made by incorporating reading books into a less intensive synthetic programme.

For many children, especially those with reading difficulties, developing competency of CVC words may take some considerable time. In addition, many words in early reading books are difficult and children at the beginning stage of reading do not possess the necessary knowledge to decode these. Within Phono-Graphix, the idea of teaching such words as part of a sight vocabulary is rejected. McGuinness and McGuinness (1998, p. 21) adopt the stance that 'the English written code is a sound symbol code, not a word symbol code. That's the game. If you're going to play it, you might as well play it right.'

The findings from a study by Seymour, Aro and Erskine (2003) may make adopting this rather rigid stance problematic. Investigating how children learn to read and write in 12 different languages, Seymour et al (2003) found that because of the complex syllable structure and deep orthography characteristic of the English language, English-speaking children take two to two and a half times as long to reach the same level of competence compared to children learning literacy in less complex languages with shallower orthographies such as Finland. This delay was attributed to the dual-process of whole-word and phonics elements, necessary for language with deep orthographies, taking longer than the single-process (phonic) foundation necessary for languages with shallow orthographies.

As a result of the complex structure of the English language, Brooks (2003) supports the teaching of a small initial sight vocabulary, stressing that phonically regular words should be taught phonically with only the most complex being learned as whole-words. According to Brooks (2003), children should be told explicitly that only a few words have to be learned this way. It is possible to argue that some children, even if encouraged to memorise a small number of sight words, may believe that reading involves learning whole-words. In our opinion, as children are encountering many of

these sight words in text, teaching these in the context of the story by offering explanations regarding the components of the word, offers a more meaningful approach than simply learning words in isolation.

Conclusion

It is apparent that Phono-Graphix does represent quite a significant shift in teaching, a shift that involves teaching only letter sounds, emphasising a singular approach to decoding words, the avoidance of using reading books too early and the rejection of teaching a sight vocabulary. This shift was designed to create a logical, speedy and effective reading method. In theory, Phono-Graphix appears to contain the ingredients for such a method. The reasoning behind each particular change in approach seems plausible, especially in relation to children experiencing reading difficulties. Such children could identify with Pip's declaration in *Great Expectations* that he 'struggled through the alphabet as if it had been a bramble bush; getting considerably worried and scratched by every letter' (Dickens, 1861, p. 36). Within Phono-Graphix, the focus on teaching sounds in the meaningful context of words may help alleviate such anxieties and struggles, especially those encountered when having to learn letter names and sounds. In practice, whether Phono-Graphix represents a logical, speedy and effective method, helping children learn to read and subsequently read to learn requires more research, especially within Ireland and the United Kingdom.

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6 Reading About Science While Learning to Read

Ginny Muller¹ and Anne Tapp

Introduction

Science is what children do every day as they ask questions, make observations, examine unfamiliar objects, examine familiar objects in a new way, and try to figure out how things work. There are hundreds of motivating, engaging educational activities that support science learning. Children learn concepts best when they actively experience science, and children learn to read best when they are actively engaged in reading connected text.

A Curriculum Gap Revealed

This science experience cycle was developed as a result of an American university graduate class assignment. Both authors charged separate curriculum classes with the task of surveying in-service teachers to discover if a gap existed between the formal, printed science curriculum and the implemented curriculum. The graduate students reported a substantial gap within their local school districts. While the printed, school board-mandated curriculum articulated a well-designed program, skillfully aligned to the standards and benchmarks, very little science was actually being taught. Students reported curricular pressure to teach literacy as the high-frequency reason for abandoning science. In addition, many teachers reported their knowledge base as inadequate for the task, making them uncomfortable, and thus more inclined to cancel science lessons than other subjects.

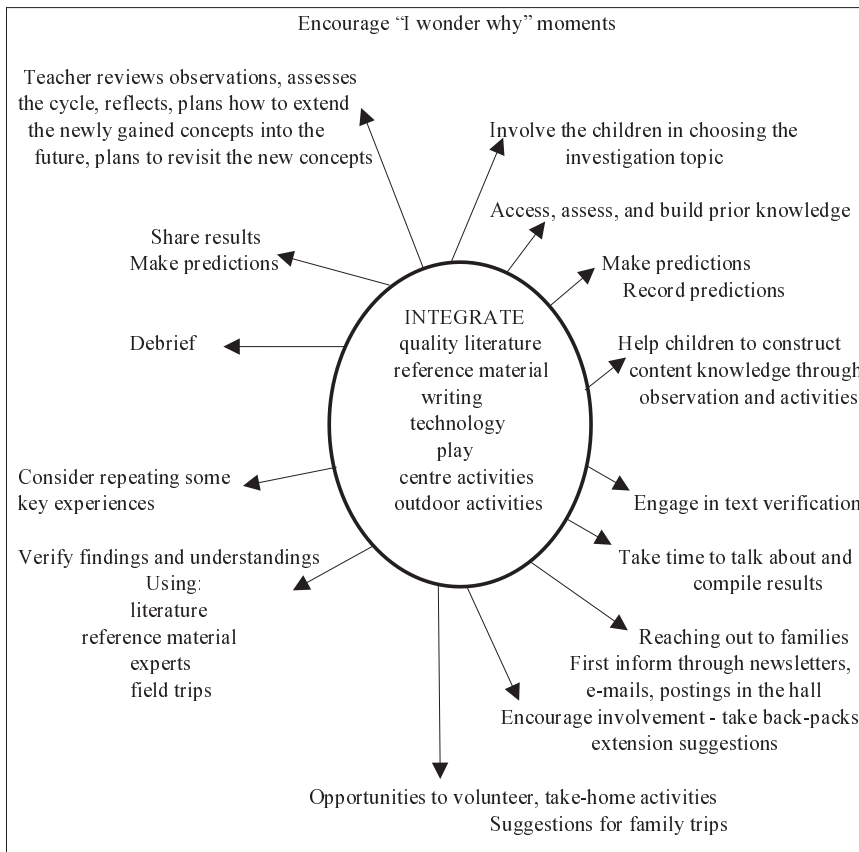
Science Instruction Can Create Engagement in Literacy Instruction

The *Quality Science Experience Cycle* was created to demonstrate the successful co-existence of science and literacy. Most young children have a genuine interest in the area of science, and this interest may transfer to the

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area of literacy, as children read text that holds their interest more successfully (Gabay, 1991, p. 7). See Table 1.

TABLE 1: ELEMENTARY QUALITY SCIENCE EXPERIENCE



Encourage ‘I Wonder Why’ Moments

Children also experience more reading and comprehension success when they have established some degree of prior knowledge within the content area. Much of the learning experiences for young children are rooted in oral language. Successful elementary teachers encourage those ‘I wonder why?’ moments. Successful teachers help children see everyday

events through a new lens. The teacher does not need any background in science to accomplish this; simply a willingness to listen.

Involve Children in Choosing the Topic

The role of the teacher is to “bridge the gap between what the reader already knows and what the reader needs to know before he or she can meaningfully learn the task at hand” (Ausubel, 1968, p.148). Science lessons may build prior knowledge and awaken interest in the assigned text. Science is all around us, and content-ready texts are readily available. Varying-level books exist within the same area of science benefiting all ability readers within a classroom. But with so much available, teachers and children need to differentiate between a topic that might be an entertaining chat on the playground and a topic that might be worth a sustainable scientific inquiry. A conversation during a class meeting allows students to think critically about the topic. Even if the large topic is mandated, the children can still engage in a critical conversation about sub-topics worthy of investigation. “Real science begins with childhood curiosity, which leads to discovery and exploration with teachers’ help and encouragement. It involves three major components: content, processes, and attitude” (Conezio & French, 2002, p 2). Some teachers use a grid as an aid to decision making, such as the one in Table 2.

TABLE 2: DECISION MAKING GRID

Topic: _____

Idea	Might be Interesting	Involves Travel	Could be Dangerous	Part of the Curriculum	I know Someone
Idea 1					
Idea 2					
Idea 3					

Access, Assess, and Build Prior Knowledge

Once the decision has been reached to pursue a particular topic, it is important to access prior knowledge. This helps the teacher to decide the starting point for instruction, and points out misconceptions. Many able

teachers use the K-W-L strategy, developed by Donna Ogle (1986). This is illustrated in Table 3.

TABLE 3: KWL

Topic _____

What Do I Know?	What Do I Want to Learn?	What Have I Learned?

The Letters represent three headers: *What Do I Know*, *What Do I Want to Know*, and *What Did I Learn*. The first step of the strategy is simply to ask the students to share what they know about the topic. The teacher then records each statement without comment. The children are assigned a homework task: ask about the topic at home, and make a three item list of what they would like to learn.

After the children go home, it is important for the teacher to read the list and reflect. It is very important to identify misconceptions, as children tend to cling to wrong information with great tenacity. Misconceptions can lead to learning difficulties, so this is important. It is through conversations, guided activities, and text verification that correct perceptions and information can be reinforced. With multiple exposures, misinformation can be replaced with scientifically accurate information.

Make Predictions, Record Predictions

This is a good activity for the science journal. It can be accomplished within a large or small group setting or individually. It is important for students to write their predictions. First, this is what scientists do. Second, children learn to write by writing, and they write better if there is an authentic topic about which to write. Sometimes, the process to predict/observe/study/interact/ then predict again needs teacher input. For example, take the topic of studying the mixture of two primary colours to

create a third colour. One way to demonstrate this to a group of children is to place a fairly large clear glass jar on an overhead projector, turn the projector on, and turn the classroom lights off. This creates an interesting glow when adding a bit of vegetable oil to the jar. This gives the teacher time to talk to the children, and it gives the children time to focus attention on the jar. The teacher then adds drops of two different primary colours of food colouring, for example, yellow in one spot and red in another. The colour will sit on top of the oil for a moment and will suddenly fall through the oil. The jar will be filled with growing plumes of colour. Because the jar is sitting on a heat source, there will be a heat rille moving through the water. This motion will cause the two colours to mix, and the water will turn orange. Then the children might write a prediction. Could this experience be repeated with the same results? What will happen if different colours are used?

Help Children Construct Content Knowledge Through Appropriate Activities and Observations

Children need appropriate, motivating reading materials as well as opportunities to investigate, sort, and manipulate within science centres. Children need to step back to observe, speculate, and to reflect. They need the chance to discuss the findings, to engage in text verification, to collaborate, and to engage in personal scholarship. Centre materials, along with related, quality literature may sustain your students' interest for up to two weeks. Students should be closely observed to see how often they visit the centre, how long they stay, and their level of activity while at the centre.

Elementary educators need to allow for teachable moments. Kathleen Conezio and Lucia French, commented that:

Young children, like all scientists, need to practice the skills of predicting, observing, classifying, hypothesizing, experimenting, and communicating. They also need time to reflect on their findings, how they reached them, and how the findings compare to their previous ideas and the ideas of others. In this way, children are encouraged to continue the discovery process. By building on young children's curiosity about the world around them, families, teachers and other adults can make science come alive, thereby reinforcing science learning. Science provides a rich knowledge base that will become an essential foundation for later reading comprehension. Exploring the

natural world presents authentic opportunities for children to listen and talk (2002, p. 16).

If you were to investigate colour mixing, some of the centre activities might include:

- Mixing yellow and red frosting on a sugar cookie
- Mixing yellow and red clay
- Sprinkling red and yellow sugar on white paper and allowing it to stand in a light rain for a moment. Then putting it on a sheet of newspaper and sprinkling it with salt. Look carefully after it dries to see sparkles.

Each of these activities may become entries in a science journal. Students list the materials, procedure, anticipated outcome, and the actual outcome. This topic lends itself to the children illustrating the activity. Suddenly frosting a cookie is more about colour mixing than it is about frosting. Interesting new words are discussed and can be posted within the classroom.

Colour mixing can be investigated very successfully on the internet. At <http://www.oms.edu/visit/tech/colourmix.cfm> and <http://www.science.netlinks.com/lessons> the children can manipulate both light and ink, and observe how the addition and subtraction of one colour affects the resultant colour. At <http://www.explorelearning.com>, the colours of fireworks are addressed.

Engage in Text Verification

Real scientists look for information in the literature. Young scientists can do the same. At many online book sites there are internal search engines that can be used to find quality books. For example, a search for the term 'colour' at Booksource.com, <http://www.booksource.com>, produced a list of 500 titles.

It is during science time that children can be invited to read books that are well within their reading success level for the scientific content. Children can learn techniques for reading non-fiction materials during this time. Then, during the reading instructional block, the children may read fiction books with the same topic running through them. colour mixing leads to just fun in school as the children read about characters getting in and out of one mess after another. Connections may become apparent and may be recorded in science journals.

Take Time to Talk About and Compile Results

Take time to talk about and compile the results of any explorations and discuss ways real scientists engage in the same behaviors. These conversations lead to more questions; verify the issues through literature, reference materials, visiting experts, and field trips. One noted master teacher writes letters to the immediate world, inviting working professionals into her classroom to help her students to understand science. It is amazing how many people will come to school to talk with children or write a letter explaining their occupation. When the child of the day goes down for the mail, it is an adventure. The notion that real, regular people do science daily is reinforced, as well as the notion that schooling leads to an interesting job in the adult years.

Remember to Reach out to Families

Every parent wants the child to do well in school. Schools need to partner with families to maximize learning opportunities. The home/school learning connection is essential. Many teachers have been successful in reaching families through regular newsletters, science literacy take-home bags that circulate, and bulletin boards in the hall where parents gather to wait for school dismissal. Send home colour mixing homework: drop a single drop of food colour into the bottom of a small paper cup and allow to dry overnight. At the close of the day, each child takes home two cups, fills each half-full with either milk or water, and observes what happens. Next, the child pours both cups into a glass, and observes the results. The child then writes a report about what happened.

Parents are often very willing to provide a real-world context to the unit of study. When there is a study involving colour mixing, consider reaching out to parents and ask them if they work in a job where colour mixing is important, or if colour is important to what they do. Our classroom welcomed a number of parents:

- A lineman who talked about the three colour tests he needed to pass and passed around a thick line of cable so the children could see how lines are colour-coded.
- A lab worker who talked about how poisons are identified through chromatography.
- A cake decorator who brought big cookies and talked about paste colours and colour mixing to order, squeezed lines of primary colours inside a huge pastry tube, filled it with white frosting and allowed

each child to decorate a cookie. No two were the same as the colours mixed.

Verify Findings and Understandings/Debrief

Children who are given the opportunity to make choices at school engage in the learning more whole-heartedly (Robinson, 1999). When this onus is placed on them, students more readily engage in the life of the classroom and enjoy greater benefits from the instruction than children who are just going through the motions. If we want children to take responsibility for their own learning, we must first give them responsibility for their own learning. The way a child learns how to make decisions is by making decisions, not by following directions. As written by Clemens and Battista, "Knowledge is actively created or invented by the child, not passively received from the environment." (1990, p. 34) It is important to realize each child and class has different interests, needs, and prior knowledge, and it is important to celebrate learning in the classroom. This is the place to return to the KWL and complete the last column. Once a teacher is aware that a child does not understand a particular concept, additional, specific lessons may be planned to address that misinformation.

Share Results

Teachers realize that children learn concepts best when they actively engage in hands-on, minds-on learning. However, children need not be taken on an out-of-the-classroom field trip to experience science. What they do need is somebody to listen to them, show an interest, demonstrate that interest by pulling out an appropriate book, and expanding the conversation. Successful elementary teachers ask their students to observe and talk about encounters in their everyday life. Some of these experiences are teacher initiated; others are events that children notice. If a teacher celebrates what the child has noticed, children feel affirmed, take risks, and are more likely to really notice and think about things around them.

Think about how the students could share what has been learned. A colour-mixing event provides an opportunity to review as well as an authentic reason to engage in literacy.

Make Predictions

The cycle begins again. What topic should be the next focus? Sometimes, it is the unplanned lessons that best engage children. Wise teachers involve their students in choosing the investigation topic. Often,

the meatiest, most productive conversations with young children spring from their interests.

The Centre of the Cycle

The centre of the cycle addresses the classroom environment and the integration of a variety of elements: literature, reference materials, technology, writing, play, centre activities, and outdoor activities. These are both fun and creative elements of the cycle. Use all of those elements to revisit the new knowledge. One way to expand and validate the inquiry is to take photographs of the children's work or allow them to take photographs. For example, the following internet site will show children happily mixing colours at a summer school program: <http://www.dare.k12.nc.us/moxie/schools/FFH/colour-works.shtml>. Pictures can then be used to weave literacy activities through the science inquiry. This provides the children with evidence of the topic they actually want to write about as well as illustrations for journal entries making them more vivid and interesting. As Cynthia Hoisington reported: "... photographs are useful tools not only for literacy learning, social-emotional development, and assessment, but also for science teaching and learning" (2002, p. 27).

Often, an investigation will lead to a desire to write a book. This is a good place to use the photographs taken during the course of the investigation, and reading the class book is a good way to re-visit the inquiry. Plan events that encourage writing, including helping children to develop e-mail relationships. This creates a win-win relationship as young children gain encoding skills while building a knowledge base. If you use undergraduate students for your respondents, they gain a familiarity in reading invented spelling. If you use remedial elementary students as respondents, they gain a reason to read books that are at their success reading level without any social embarrassment.

Skillful teachers know that research suggests that prior knowledge about any given topic is the single biggest predictor of learning success for that topic. So, it is also of great benefit for teachers to talk with their students with great frequency, listen carefully, and pick up on any opportunities to engage in teachable moments. Reflection is important for scientists in the field and is just as important for science students. It is up to the teacher to decide which concepts are key, and revisit them after the actual study has been completed. Likewise, the teacher knows which topics are mandated in the curriculum, and can look for ways to create prior knowledge. Always be on the look-out for ways to re-activate the

knowledge gained in the investigation. How else do colours mix? Could you mix the colours found in spring flowers? Do falling leaves stain the pavement under them? This *Quality Science Experience Cycle* is a guide which can be used to create many authentic literacy experiences. Children need something to read, a reason to read, and a desire to read. Likewise, they need a real reason to write to build the desire to write. Why not read about science?

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7 Reading Achievement in Children from Disadvantaged Areas: Views of Teachers and Parents

Eemer Eivers¹

Introduction

A key target of the 2001 *Review of the National Anti-Poverty Strategy* (Goodbody Economic Consultants, 2001) is a halving of the proportion of pupils with serious literacy difficulties in designated disadvantaged primary schools by 2006. Arising from this target, the Department of Education and Science (DES) asked the Educational Research Centre to conduct a survey of reading standards in these schools. The aims of the survey were to establish baseline data on the proportion of pupils with 'serious reading difficulties', and to make recommendations to assist the DES and schools to reach the National Anti-Poverty Strategy (NAPS) target. A report on the survey – *Reading Literacy in Disadvantaged Primary Schools* (Eivers, Shiel & Shortt) – was published in 2004.

The survey (henceforth referred to as the Literacy Survey) contained quantitative and qualitative elements. To provide context, some quantitative elements (reading achievement data) are described briefly below. However, the main focus of this paper is the qualitative element of the survey (interviews with parents, teachers and principals) in order to establish their views on promoting reading achievement in designated disadvantaged schools.

Reading Achievement in Designated Disadvantaged Schools

Numerous Irish studies have found that, in designated disadvantaged schools, or in schools with many disadvantaged pupils, average reading achievement is poorer than in non-designated schools or in standardization samples (e.g., Archer & O'Flaherty, 1991; Cosgrove, Kellaghan, Forde & Morgan, 2000; Hayes & Kernan, 2001; McDonald, 1998; Weir & Eivers, 1998; Weir, Milis & Ryan, 2002).

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Unfortunately, none of the studies cited describe the reading achievements of pupils in a range of disadvantaged schools. Some focus on achievement in Breaking the Cycle schools (a very disadvantaged subset of schools). Others are based on test standardisation samples, and national and international studies, and do not sample enough disadvantaged schools to provide precise estimates of performance. The Literacy Survey was designed to address these shortcomings.

In June 2003, baseline data were obtained on the reading achievement of almost 6,500 pupils in First, Third and Sixth classes in a representative sample of designated disadvantaged schools. Pupils were assessed using a new test, the *Drumcondra Sentence Reading Test* (DSRT), standardised on a nationally representative sample in 2002. Test results revealed that pupils in the Literacy Survey had lower average scores than pupils nationally, with the difference ranging from 8 points in First class to 11 points in Third class (Table 1.1). As the standard deviation for the DSRT is 15 points, these differences in mean achievement are very sizeable.

TABLE 1: AVERAGE SCALE SCORES NATIONALLY AND FOR THE LITERACY SURVEY

	1st class	3rd class	6th class
Nationally	100.0	100.0	100.0
Literacy Survey	91.6	89.0	90.4

Although one of the main aims of the survey was to establish the proportion of pupils in designated disadvantaged schools with serious reading difficulties, the term is not defined in NAPS documentation. However, the DES views pupils who score at or below the 10th percentile (i.e., in the lowest 10% of test scores) on nationally standardised tests of reading as needing additional support. Thus, for the Literacy Survey, this marker was taken as indicating ‘serious reading difficulties’.

Our data revealed that far more pupils in designated schools than in the general primary school population scored at or below the 10th percentile (i.e., have ‘serious reading difficulties’). While, by definition, 10% of pupils in the standardisation of the DSRT score at or below the 10th percentile, up to 30% of pupils in the Literacy Survey achieved scores at that level (Table 1.2). Further, only 3% to 4% of pupils in the Literacy Survey, compared to 10% in the standardisation sample, achieved scores at or above the 90th percentile (i.e., are high achieving readers).

Having established baseline data on reading achievement in designated disadvantaged schools, my colleagues and I began to formulate recommendations to facilitate schools and the DES in reaching the NAPS target. As part of this process, we consulted with parents and school staff.

TABLE 2: PERCENTAGE OF PUPILS IN THE DSRT STANDARDISATION STUDY AND LITERACY SURVEY WHO SCORED AT OR BELOW THE 10TH PERCENTILE, OR AT OR ABOVE THE 90TH PERCENTILE.

	1st class		3rd class		6th class	
	≤ 10th	≥ 90th	≤10th	≥ 90th	≤10th	≥ 90th
Nationally	9.9	10.4	9.8	10.0	10.0	10.0
Literacy Survey	26.7	4.1	29.5	2.9	27.2	2.8

Views from the Interviews

In January 2004, six group interviews (two with groups of principals, two with teachers, and two with parents) were conducted. Interviews were held in two locations: a Dublin suburb, and a country town (henceforth referred to as the urban and country areas). Ten principals, 26 teachers and 24 parents were interviewed, representing ten schools. The remainder of this paper presents a selection of the views represented at the interviews, followed by a short discussion of some of the points raised. More details about the methodology and respondents' views are available in Eivers *et al.* (2004).

1. The National Anti-Poverty Strategy Target

Urban principals were the only group who believed that the NAPS target for literacy might be achievable. However, to have any chance of attaining the target, they thought that adequate resources, a language support unit and an effective language programme were required in each school. They also felt that teachers' efforts were constrained by the extent of parental support. Therefore, any initiatives planned in association with the NAPS target should involve parents. Teaching staff in the urban area were less positive and felt that the target was unlikely to be achieved, citing the very disadvantaged nature of their enrolment.

As on many of the issues discussed, there was a distinct urban/country divide. All country participants thought it highly unlikely that the NAPS target would be reached. They felt that the very poor level of resources in their schools – from lack of quality or subsidised pre-school programmes, to long delays in assessments and assigning resource teachers, to lack of support in dealing with non-attendance – militated against the target being reached.

2. Pre-School Programmes / Early Intervention

Although the Early Start pre-school programme was available only in the urban area, most parents had experience of some form of pre-school or Montessori. Parents found pre-school to be very beneficial. Perhaps surprisingly, many felt that its main benefits were not the pre-academic skills children learned, but the understanding it gave parents of what children needed to know, and the broader concepts it taught children (concentrating in class and co-operating with a group).

Teachers and principals also recognised benefits from attendance at pre-school, particularly Early Start, attendance. Pre-schools were perceived to bolster language development and readiness to read, and it was felt that schemes such as Early Start should be extended. However, urban principals criticised many programmes in disadvantaged areas for an over-reliance on Community Employment schemes for staffing. Many not only had staff without an appropriate qualification, but sometimes without adequate literacy skills.

Teachers in both locations discussed how pre-school availability affected pupil age in Junior Infants. Urban teachers felt that the Early Start requirement that attendees be 3 years old meant that many ‘young’ 4 year olds (i.e., those born in September or October) started school as soon as they completed Early Start or turned 4. In contrast, country teachers felt that the lack of a state-sponsored pre-school in their area meant that many parents who could not afford private pre-school sent their children to school as soon as it was possible to do so. Despite different causes for their concerns, both groups agreed that very young pupils were generally at a disadvantage relative to their older classmates.

3. Parent-School Interaction

All groups interviewed recognized the importance of good home-school interaction. Indeed, perhaps the commonest suggestion made was that such interaction ‘be improved’, although specifics were typically

lacking. In both locations, the Home-School Community Liaison (HSCL) co-ordinator was described as central to home-school interactions, and there was clearly a very good relationship between the co-ordinator and parents in the schools visited. That aside, there were distinct differences in parent-school interactions, based on Junior class/Senior class and urban/country divides.

Parents with children in Junior classes had more contact with teachers than those whose children were in Senior classes. One reason was that younger children were likely to be brought to the classroom door (rather than left at the school gate), thus providing chances for informal parent-teacher meetings. Parents also felt that older children are not always enthusiastic about their parent visiting the school, while comments from teachers indicated that many of the programmes to stimulate parental involvement were targeted at parents of children in Junior classes.

Perhaps more surprising was the large urban/country difference. Parents in the country area seemed far less comfortable in the school, and much more wary of teaching staff (with the exception of the HSCL co-ordinator) than did their urban counterparts. Our perceptions in this regard were supported by country teachers, who reported many difficulties in establishing parental involvement. There were also differences in how teacher contact was viewed by parents. Many urban parents discussed the new techniques for improving their child's reading they had picked up from talking to teachers. In contrast, country parents did not feel they learned very much from talking to teachers.

Aside from the country/urban differences, parents in both areas felt that they would have benefited from more information from the school, particularly before their child started school, and in relation to beginning reading. Many parents felt they did not really understand how to prepare their child for reading. Further, parents from the country area did not seem to understand the importance of oral language skills, or how such skills related to academic progress.

4. The English Curriculum

The *Curriculum Guidelines* for English (NCCA, 1999) were described by teachers as vague, over-long, and without enough practical information. Some said that parts of the *Guidelines* were so vague that they were occasionally unsure if, at the end of a lesson, they had achieved the relevant curricular goals. The *Guidelines* were also criticised for being directed at middle class and middle ability pupils. Further, some believed

that the most recent changes had led to a reduction in the time allocated to reading, which was perceived to have a disproportionately negative effect on disadvantaged pupils. While none wanted a separate curriculum for designated schools, teachers felt that some recognition of disadvantaged pupils would be helpful.

All teachers felt that the greater emphasis on oral language represented an improvement on the older curriculum. However, the country teachers expressed difficulties with conducting oral language lessons, as most had been trained prior to the emphasis on oral skills, and felt they lacked sufficient background knowledge and resources to teach oral skills as well as they would like.

Some teachers in the country area felt that while they emphasised oral language in class, pupils received little practice when they went home. However, none indicated that they had given parents any advice about how to promote oral language. Indeed, as noted earlier, country parents did not seem to grasp the importance of oral language development, making it rather less likely that they would try to develop such specific skills in their child.

While parents were not asked directly about their views on the English curriculum, comments on other topics can also be related to the curriculum. For example, all parents agreed that the simplest way to stimulate interest in reading was to use materials that are interesting to the individual child. They recognised children's diverse interests and felt that teaching materials that catered to these diverse interests were more likely to be effective than materials that were perceived to be uninteresting. Further, urban parents felt strongly that more time should be spent teaching reading, as a child who could not read would fall behind in all curriculum areas.

5. Pre-Service Teacher Training

Teachers in both areas repeatedly discussed how pre-service training did not provide them with sufficient understanding of the processes underlying reading. These views were shared by principals, who noted that many of their newer staff had difficulty in teaching reading, despite otherwise being very competent. There was a consensus that student teachers needed more information on the processes underlying reading (particularly emergent reading) and more advice on how to develop phonological awareness in pupils.

Discussion

In this section, I discuss some of the more salient points raised regarding the NAPs targets, quality of staffing, age of school entry, the intervention between home and school, and the curriculum.

1. The NAPS Target

The balance of views from the interviews was that the NAPS target for literacy in designated schools was not achievable by 2006. At the time, no specific programmes had been implemented to help reach the NAPS targets, making it unlikely that the target could successfully be reached in a two-year period. Further, new interventions can take several years to achieve maximum impact (Fullan, 2001). Consequently, teacher views and research suggest that the time period for achieving the NAPS target should be lengthened considerably.

2. Quality of Staffing in Pre-School Programmes

Urban principals' misgivings about the level of qualifications and the literacy skills of some staff employed in pre-school programmes in disadvantaged areas are not without foundation. A national review of childcare and pre-school provision (Area Development Management, 2000) found that 23% of staff in such facilities had no formal qualifications, and that the level of qualifications was poorest amongst those on Community Employment and Jobs Initiative schemes (i.e., those most likely to be working in disadvantaged areas). Thus, children most in need of intervention from qualified professionals are also most likely to be in the care of an unqualified person. It would seem appropriate that the issue of accreditation for staff on such schemes be urgently examined.

3. 'Young' Junior Infants Pupils

Teachers worried that attendance at Early Start in some areas, or lack of affordable pre-school programmes in others, encouraged 'young' Junior Infants pupils. Such pupils were perceived to be at a disadvantage, relative to their older classmates. Achievement data from the Literacy Survey (Eivers *et al.*, 2004) support teachers' views (younger than average First class pupils have lower average achievement scores than their classmates). One option might be to narrow the age range between optional and compulsory enrolment in primary school. However, a simpler option

might be to promote greater consultation between pre-school staff, parents and school staff about whether a child is 'ready' to enrol in primary school.

4. Parent-School Interaction

There was a marked urban/country divide in the extent and nature of parent-school interaction. Some of the differences between the areas may be because schools in the urban area had participated in the HSCL scheme since its inception, while it was relatively new to the country school. Perhaps the development of trust and interaction between schools and families is a gradual process, and schemes such as the HSCL scheme need to operate for a number of years before the more significant benefits become apparent. Another reason for the geographical split may be that the urban schools were involved in many schemes, and had various sources of finance for the quite diverse home-school activities organised. This was not true of the country area.

Parents in both areas (even those whose children had attended a form of pre-school) felt that schools should give parents more information prior to children starting school. One method praised as effective was a pre-school pack for parents, including guidance on what a Junior Infant child was expected to know before they started school, and a set of colouring and very simple picture/reading books. Schools' efforts to develop 'informed' parents can meet many obstacles. However, both parents and teachers acknowledge the benefits of parental understanding of the requirements of school. Therefore, it is important that such efforts continue, in as many and as varied forms as possible (e.g., packs for parents, meetings, courses for parents).

5. The Curriculum

While critical of a perceived middle class bias in the *Guidelines*, teachers did not advocate a separate curriculum for disadvantaged schools. However, urban parents felt that more time should be devoted to teaching reading, as it provided the foundation upon which many other curriculum areas are based. Similarly, some teachers worried that reading lesson time was reduced because of the most recent curriculum changes. The *Guidelines* allow a certain amount of discretionary time (often largely allocated to English lessons by teachers in disadvantaged schools). However, even if all discretionary curriculum time were to be allocated solely to English or to reading, the time allocated would fall short of that recommended by research as necessary in very disadvantaged settings

(e.g., Slavin & Madden, 2003). Therefore, an expansion of reading lesson time, at least in the Junior classes, is something that needs consideration.

6. Developing Oral Language Skills

Many teachers in the country area felt that the increased curricular emphasis on oral language was not adequately supported by their initial teacher training. A teacher who feels ill-equipped to develop pupils' oral language skills may also lack the confidence to advise parents on this matter. Urban parents described how teachers had advised them on how to improve their child's vocabulary. In contrast, country parents seemed not to understand the importance of developing oral language skills, perhaps reflecting teachers' lack of confidence in this area. Thus, while recently qualified teachers may have an adequate grounding in oral language development, appropriate in-career development (ICD) for more experienced teachers would be of benefit.

7. Pre-Service and Inservice Teacher Training

Non-teachers would be surprised to find that many teachers feel inadequately prepared to teach reading, given that reading and writing are 'the building blocks on which all further learning is predicated' (Barber, 1997, p.3). Furthermore, ICD does not seem to compensate for the perceived deficiencies of pre-service training. Questionnaire data from the Literacy Survey indicated that up to half of class teachers rated ICD on identifying and dealing with reading difficulties as of 'not much use', a view re-iterated in the interviews. Therefore, I suggest that pre-service courses need a stronger focus on the processes underlying reading, and on reading development. Further, ICD that emphasizes the processes underlying language and literacy, and is practical rather than theoretical, should be readily available to teachers in designated disadvantaged schools.

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8 Teaching Diverse Students to Read

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Introduction

Today, as in years past, teaching children to read is a major challenge and a complex process. However, the challenge is getting greater. Our classrooms are changing – more than ever before, students in classrooms are poor and represent many racial, cultural, and ethnic backgrounds. While children from all socio-economic backgrounds can experience difficulties in learning to read, it is widely documented that low levels of reading achievement are highest among poor children, ethnic minority children, and children who speak home languages other than English (Donohue, Voelkl, Campbell, & Mazzo, 1999; Anderson, 1994). Still, observation of effective teachers and examination of current research on teaching continues to highlight that the classroom teacher has a tremendous influence on whether or not children are successful in learning to read (Heilman, Blair, & Rupley, 2002). Children do not become effective readers by merely growing older. Reading success depends largely on the type and quality of instruction.

Realities of the Classroom

Children who experience success in learning to read are successful not only throughout their school experience but also in life (see Morgan, this volume). The ability to read enables children to open up a whole new world of imagination, wonder, information, and excitement. Successful students are able to use reading as a tool to satisfy a variety of purposes ranging from reading for specific information to satisfy a job requirement to reading fine literary works for pure enjoyment. These students learn the “how” of reading and develop the desire to read and learn on their own. Children who struggle in learning to read often fail in school and are at high risk for dropping out. These children are also at greater risk of experiencing various social and economic risks, such as continuing in the poverty cycle, low paying jobs, and crime. Despite these realities, many diverse children become literate and lead successful, productive lives.

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Compounding the achievement gap between diverse and mainstream students are two compelling points: one, the number of diverse students is on the rise in U.S. schools and two, the teaching force is becoming less and less diverse in nature (National Center for Education Statistics, 1997). It was reported that in 1994, the teaching force in the U.S. was 87% white, with only 13% teachers of colour, whereas the student population of colour approximates 50% nationwide. Most teachers in the work force and those preparing to teach will undoubtedly be teaching students in their classrooms with backgrounds quite unlike their own.

Multicultural Education

Multicultural education has many meanings. Reflecting the standards of the National Council for the Accreditation of Teacher Education (NCATE), Gibson (1984) defined multicultural education as “the process whereby a person develops competencies in multiple systems of standards for perceiving, evaluation, believing, and doing” (p.112).

Multicultural education involves not only accepting and respecting students’ cultures, but also celebrating each individual with regard to his or her cultural background. A student’s culture affects how that student perceives both the school’s structure and learning objectives. Also, the current U.S. school system reflects the institutionalised culture in our society. In most cases this is the white middle class, although this is changing. The meanings of instructional activities in school take on a different measure of importance depending on culture. Thus, many times the dominant culture of the school is at odds with the cultural background (both overt and covert) of many students. Classroom teachers of reading need to adjust their instruction to meet the natural strengths of the cultures represented in their classrooms. Au (1993) has labeled this type of teaching as ‘culturally responsive instruction’ and defines it as being “consistent with the values of students’ own cultures and aimed at improving academic learning” (p.13). Accepting, respecting, and celebrating cultural differences automatically increases both the satisfaction and the complexity of the teaching-learning process. It also challenges teachers to provide equal access to all students.

Effective Teaching

Teaching involves those attitudes, skills, and abilities needed to guide student learning. More specifically, teaching can be defined by describing those teaching behaviors necessary to teach students what they need to

know. Teachers in diverse classrooms need to provide the same high quality instruction that teachers provide in effective mainstream classrooms. Over the years, scholars in teaching have analysed the teaching process by describing what teachers do when they teach. Jere Brophy (quoted in Berliner, 2000), a noted authority on effective teaching, summarised the recent teacher effectiveness research as follows.

Principles of Effective Teaching

1. With regard to a supportive classroom environment: Students learn best within cohesive and caring learning communities.
2. With regard to opportunity to learn: Students learn more when most of the available time is allocated to curriculum-related activities and the classroom management system emphasises maintaining their engagement in those activities.
3. With regard to curriculum alignment: All components of the curriculum are aligned to create a cohesive program for accomplishing instructional purposes and goals.
4. With regard to establishing learning opportunities: Teachers can prepare students for learning by providing an initial structure to clarify intended outcomes and cue desired learning strategies.
5. With regard to coherent content: To facilitate meaningful learning and retention, content is explained clearly and developed with emphasis on its structure and connections.
6. With regard to thoughtful discourse: Questions are planned to engage students in sustained discourse structured around powerful ideas.
7. With regard to practice and application activities: Students need sufficient opportunities to practice and apply what they are learning and to receive improvement-oriented feedback.
8. With regard to scaffolding students' task engagement: The teacher provides whatever assistance students need to enable them to engage in learning activities productively.
9. With regard to strategic teaching: The teacher models and instructs students in learning and self-regulation activities.
10. With regard to cooperative learning: Students often benefit from working in pairs or small groups to construct understandings or help one another master skills.
11. With regard to goal-oriented assessment: The teacher uses a variety of formal and informal assessment methods to monitor progress toward learning goals.

12. With regard to achievement expectations: The teacher establishes and follows through on appropriate expectations for learning outcomes. (p. 366-367)

Culturally responsive instruction emphasises the above qualities but also takes into account a student's culture and fundamental elements of teaching reading to students who are culturally, linguistically, and racially different. For example, students will differ in terms of values, learning styles, communication patterns, and orientation to schooling to name a few. These differences not only affect how well students will learn but also should indicate differences in how they should be taught.

Performance Indicators in a Culturally Diverse Classroom

Impressions of experience and recent research on teaching diverse learners have yielded indicators of teaching that when applied appropriately enhance student learning and growth (Au, 2002; Blair, 2003). Teachers can spend their time and effort in a variety of ways in teaching struggling readers, and research on teaching has helped us discern which efforts in teaching are more helpful than others. Clearly not all efforts in teaching are helpful. The emphasis on these multicultural indicators illustrates a change from traditional classroom thinking and practice to new, culturally sensitive ways of delivering instruction. The quality of life and the academic achievement in today's diverse classrooms can be enhanced when teachers focus on the following multicultural performance indicators of instruction:

- Capitalise upon the interests, background knowledge, past experiences, language, family lifestyles, and cultures of your students
- Stress oral language development activities (listening, speaking)
- Take special care to build background knowledge on instructional topics
- Design classroom activities that promote critical thinking
- Utilise peer tutoring and cooperative grouping plans
- Plan and carry out highly interactive discussions
- Continually tell students why they are doing what they are doing
- Focus on student comprehension of ideas, not decoding abilities
- Remind students that they will learn and be successful in your class (regardless of previous problems)
- Provide a curriculum that is cognitively challenging

It is proposed that future teachers of reading not only become knowledgeable regarding the research-based components of effective instruction including knowledge of the reading process, teaching strategies, and materials but also multicultural performance indicators of classroom practice. These indicators seek to answer the crucial question: What teaching strategies must classroom teachers of reading be able to perform as they work with struggling readers in the classroom?

There is much we would like our new teachers to know and be able to do. The list of objectives is indeed endless. While acknowledging the desire for new teachers to know a great number of topics, it is proposed that future teachers need a baseline of multicultural performance indicators and a self-monitoring attitude to be successful in multicultural classrooms. While we certainly know some of the elements of effective instruction in diverse classrooms, no simple formula can be given for all classrooms. A formula for effective instruction for all students, regardless of race, ethnicity, gender, socioeconomic status, age, grade, interests, needs, learning styles, and learning rate is incompatible with our knowledge of students and learning. We simply cannot prepare new reading teachers to handle all situations with expert skill. What is compatible and reasonable, however, is the development of a self-monitoring, reflective attitude that generates useful information about the students, the content being taught, the classroom context and physical environment, and possible teaching strategies to accomplish your goals (Blair, 2003). It is proposed that new teachers who engage in a process of monitoring their own teaching become more culturally sensitive and are able to provide culturally responsive instruction in the classroom. Culturally responsive instruction is instruction that is sensitive to students' cultures and capitalises on the students' cultures in designing and delivering instruction. An approach to teaching reading based on this proposition encourages teachers to become self-monitors who reflect on their teaching and ask, "Why am I doing what I am doing? How does it work? Why did it happen this way? How might it work better next time?" The ability to observe oneself honestly, monitor one's teaching, and modify one's teaching is a hallmark of a true professional.

Conclusion

The highest priority in reading education should be to develop in teachers the dispositions to be successful in teaching reading to all children, especially those children who are struggling or failing to learn to

read. Teaching struggling readers is not for the faint of heart – it is a difficult job. Yet, this goal is achievable if teachers modify their instruction by capitalising on the culture and background of their students. Cultural differences influence the performance of all students and should influence the way classroom teachers teach reading.

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9 Assessing Literacy Practices

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Introduction

Recent research on assessment would suggest that assessment information can be used to enhance pupil achievement (Black & Wiliam, 1998; Black *et al.* 2003; Clarke, 2001). Evidence from this research has identified the nature of the interactions between teachers and pupils within these assessments as key to their success. Do the interactions provide opportunities for teachers to make the success criteria explicit to students? Do they provide opportunities for students to reveal what they know and can do, so that teachers may build on this to provide appropriate feedback to pupils? Perhaps one of the most critical factors to examine is whether the interactions enable pupils to engage actively with the feedback to improve subsequent work. This paper examines the opportunities for pupil participation in, and engagement with, literacy assessment practices. In order to situate this kind of assessment practice, different purposes for assessment are identified. The nature of assessment practice that is likely to enhance pupils' literacy development is then outlined. The paper concludes with a summary of the issues, and the implications these raise for practice.

Purposes for Assessment

Assessment purposes may be identified by categories that include summative assessment, diagnostic assessment and formative assessment. Wiliam (1998) suggests that these terms do not describe assessment but rather the use to which information arising from the assessment is put. Each of these categories relate to pupil learning, but it is the nature of that relationship that influences the extent to which assessment information could be used to enhance pupil achievement in a given area. Black & Wiliam (1998) have been credited with introducing the terms 'assessment *of* learning' and 'assessment *for* learning' to distinguish between summative and formative assessment. On the one hand, they consider

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assessment information being used to give an account of a pupil's achievements in a given area at a given point (summative); on the other hand, they describe assessment information may be used to make decisions that enable pupils to enhance their learning and achievement (formative). It could be argued that diagnostic assessment is a sub-set of both.

Summative and formative assessment are concerned not just with a minority of pupils who are under-achieving, but with all pupils. These assessments are the responsibility of the classroom teacher.

Therefore, any assessment information could be used summatively or, formatively; perhaps less so diagnostically given the specific information needed from these assessments; but formative assessment should also yield specific context-relevant information that the learner can use to move forward. If, on the other hand, as Filer (2000) argues, assessment is conducted *on, by and for inherently social actors*, then we need to acknowledge the context in which these assessments occur and the ways in which the actors (pupils) in the assessment mediate its practice, including the purposes for the assessment, as perceived by them.

Summatively assessing pupils means identifying, recording and reporting where the pupil is right now in terms of her literacy development. It means documenting this pupil's achievements and what s/he can do at this point in time. This kind of assessment information used summatively may be norm-referenced or criterion-referenced, but it nevertheless documents what the pupil can do in relation to constructs defined by others. Summative assessment information typically includes information yielded from standardised tests such as the Drumcondra Primary Reading Tests (DPRT) (Educational Research Centre, 1997) and Micra-T (Wall & Burke, 1991) reading tests.

Examples of assessments that are used to provide diagnostic information are Neale Analysis test (Neale *et al.*, 1997), Mist/Forward Together (Hannavy, 1993) and Aston Index Profile (Newton *et al.*, 1972). It is intended that data from these assessments will inform individualised reading/writing programmes for particular pupils. Results from these tests give evidence of pupils' strengths and weaknesses in particular reading and writing skills. They also yield insights into the strengths and weaknesses of these pupils' reading strategies that, in turn, can inform how best to help these pupils improve.

Using assessment information formatively is understood to mean that information from routine classroom interactions, whether 'planned' or 'interactive' (Cowie & Bell, 1999), will be used to feed forward directly into the future teaching and learning in that class. This may be at whole-class, small group or individual level. This, therefore, is the assessment

purpose most closely bound up with teachers' routine classroom work and is relevant for all pupils. What does it mean to use assessment information formatively? It is not as clear-cut as being able to record information from responses to a ready-made test. A different way of discussing formative assessment has evolved in the literature that does not mention specific scores from tests. Rather, the literature on formative assessment discusses how information may be used in ways that impact on pupils' achievements, and the conditions necessary in practice to facilitate this. For more explicit descriptions and discussions on this, see Black & Wiliam (1998), Stobart & Gipps (1997), Torrance & Pryor (1998), and Black *et al.* (2003). Key messages from this body of work about strategies that are supportive include the following: 'wait time' – giving students time to reflect on questions before having to make a response; comment-only marking – this involves giving specific feedback on their work, but not giving grades or marks. Another key finding relates to the value of peer and self assessment, as these involve the learner in discussing their own or someone else's work in relation to success criteria.

However, a critical aspect of assessment information being used formatively is the way in which teacher feedback intent is translated into pupil feedback effect. What makes the critical difference to pupils actually acting on the feedback given to them by teachers? Sadler (1989, 1998) has noted that key elements of this are: (i) the need for teachers to make the success criteria transparent and explicit for pupils; and (ii) the need for pupils to then accept and act on their role as learners that, in turn, means assessment practices should facilitate both these processes. In the first instance it should not be a 'guessing game' for pupils. Assessment practices that can enhance pupil achievement and learning should provide opportunities for pupils to come to know the criteria for being successful. Secondly, these practices should provide opportunities for pupils to rehearse these success criteria. What is being argued for are ways of assessing children's literacy that allow the child's voice to be heard.

Classroom Literacy Assessment Practices

What opportunities do reading and writing assessment practices afford pupils that enable them to share in constructing the success criteria in the first instance, and secondly afford them the opportunity to then, demonstrate how their reading and writing gives evidence of these criteria? Table 1 provides an overview of four common literacy assessment practices and a summary of the opportunities provided for pupil

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engagement in them. The assessment practices highlighted here are not presented as the assessment practices engaged in by all classroom teachers, but rather, as assessment practices that could typically be carried out by classroom teachers as ways of finding out about children's reading and writing.

TABLE 1

Assessment Practice: <i>Standardised Test</i>	
<i>What information does it yield?</i>	It provides information about this child's achievements relative to the rest of the population.
<i>Who records this information?</i>	Information is documented, recorded and reported by the teacher.
<i>How does this information feed forward into teaching and learning?</i>	Overall pointers for the teacher if a significant number of pupils show weakness in a particular area. Provides information about a particular child's literacy achievement that could inform future literacy instruction, although mainly if the child is underachieving.
<i>To what extent is the voice of the child enabled to be heard?</i>	Pupils are unlikely to take risks to reveal what might, in effect, be errors as these are used to make comparative judgements.
Assessment Practice: <i>Running Records</i>	
<i>What information does it yield?</i>	The cueing strategies used by pupils as they read.
<i>Who records this information?</i>	The teacher records and documents very detailed information.
<i>How does this information feed forward into teaching and learning?</i>	An analysis of pupil errors helps inform the kind of reading strategies that pupils need to improve.
<i>To what extent is the voice of the child enabled to be heard?</i>	The child and teacher work in a one-to-one situation and thus the child may feel more comfortable revealing his/her learning to the teacher. It helps make the invisible process of reading more visible.
Assessment Practice: <i>Portfolio</i>	
<i>What information does it yield?</i>	This documents a child's learning journey as s/he writes; the content and engagement in different stages of the writing.
<i>Who records this information?</i>	Child records and documents, with some consultation with the teacher and perhaps peers.
<i>How does this information feed forward into teaching and learning?</i>	Visible, tangible evidence of what a child can do is available to both teacher and pupil. This information can be used by both to inform future developments in writing.
<i>To what extent is the voice of the child enabled to be heard?</i>	The child has ownership of the portfolio arising from the fact that it is s/he who decides what goes into the folder and also the reason for those choices.

TABLE 1 - CONTD.

Assessment Practice: Reading/Writing Conference	
<i>What information does it yield?</i>	This gives information about pupils' literacy development and potential development. Provides information about the pupil as a reader and writer.
<i>Who records this information?</i>	Child decides and chooses what to record; may get some 'technical' help from the teacher.
<i>How does this information feed forward into teaching and learning?</i>	Visible, tangible evidence of what a child can do is available to both teacher and pupil. This information can be used by both to inform future developments in writing.
<i>To what extent is the voice of the child enabled to be heard?</i>	Child understands that s/he has a contribution to make to own literacy development. Decisions about own learning are important.

Standardised Tests

Standardised reading tests have been a traditional feature of reading assessment and are an increasing feature of life in Irish classrooms (e.g. Curran, 1994; Hall and Kavanagh, 2002). Norm referenced tests such as the Micra-T and the Drumcondra Primary Reading Test (DPRT) indicate how the reader rates in relation to other same-age readers or same-grade readers in the population. While pupils may understand what they need to do in order to score well on such tests, they do not share in the construction of the success criteria. In addition, the information yielded through scores on these tests is not detailed enough to be useful for improving teaching (Brookhart, 1999). They tend to focus teachers on what children cannot do rather than on what they can do. Nevertheless it must be noted that as one source of evidence among others, test results can be useful indicators of achievement. The problem with using assessment information to enhance children's literacy achievements occurs when tests such as these are the primary way of recording and documenting children's achievements. They serve the summative purpose of assessment very well but not the formative purpose.

Running Records

Running Records (Clay, 1985) are a means of analysing how children use different cueing systems (grapho-phonetic, syntactic and semantic) as they read a text aloud. They assess reading directly. They involve the

observation, recording and evaluation of the 'errors' a child makes while reading aloud. The teacher makes annotations of the differences between the text as read and the text as written. The underlying assumption is that the miscues made by the reader offer insights into the range and efficiency with which s/he applies those strategies. The outcome of the assessment is a descriptive and evaluative account of the reader's strategies while reading. Because the interpretation is tied to data it provides a rich source of information that is helpful to the teacher deciding how best to plan for that child's literacy learning. In terms of enabling the child's voice to be heard, it makes the invisible process of reading more visible, and therefore more easily documented.

Portfolios

Portfolios are a means of documenting a child's writing journey. Portfolios can be used summatively; for example, a showcase portfolio which displays a pupil's best pieces of work could be used to identify his/her writing achievement at a point in time, and statements could be made about the level of this work. However, the portfolios that contribute most to helping the child improve his/her writing are the documentation portfolio and the process portfolio (Valencia, 1998). Both capture the steps taken as the child completes a piece of writing. They can provide very tangible evidence for both teacher and pupil about what it is the child can do and also note areas for future development. They can be the focus of a writing conference (see below) and since the child has the final call on what to include in the portfolio, a very powerful message is given about whose voice counts here.

Reading and Writing Conferences

Reading and writing conferences are used to discuss the child's achievements and interests as a language user. They can be a more structured form of the on-going dialogue between teacher and pupils about themselves as readers and writers. The teacher and child together may discuss specific pieces of work and plan ahead i.e. set targets and goals around that child's literacy progress (Barrs *et al.*, 1992). Decisions reached at the conference are recorded and can be revisited at a later stage to review progress in relation to the goals and targets set. As an assessment tool, these conferences can give information about the pupil as a reader and writer, as well as what reading and writing skills s/he may have and use. Since children themselves are involved in setting targets they get powerful

messages about the contributions they can make to their literacy development. In other words the child can say ‘the decisions I make about my learning are important’.

Whether or What

Having described some assessment practices that are commonly used to document pupils’ achievements and progress in reading and writing, we now discuss the extent to which these assessments can yield information that can be used formatively i.e. to provide information that can directly inform future teaching and learning for these pupils. A key aspect of being able to use assessment information formatively is being able to find out not so much *whether* a pupil knows or can do certain tasks, as to find out *what* this pupil knows or can do (Hall, 2000). This information can then be used by the teacher as the basis for feedback to the pupil about his/her literacy skills and knowledge and practices. The nature of the interactions within this feedback process should also allow for dialogue between teacher and pupil.

In this regard, of the practices outlined in Table 1, it would seem that portfolios and reading/writing conferences provide the best opportunities for obtaining the kind of information that will facilitate dialogical interactions. In particular, they can provide explicit and tangible evidence to the learner that their involvement is important, that their contributions count. This is consistent with a socio-cultural perspective on literacy which considers the acquisition of school literacy practice as bound up with learners’ motivations to identify with that practice (Hall, 2003). They must accept and believe that it is useful to their lives. Knowing literacy and becoming a reader and writer means being able to participate in a community of literate practitioners, and being able to use the tools and technology of the community. Therefore we need ways of facilitating pupils’ participation in literacy activities including assessment. It is acknowledged that it is not possible to predict in any absolute way how learners might position themselves in these assessments, as all participants have agency, and the context itself – the particular setting and the relationships within that setting – mediate responses and interpretation and, therefore, outcomes.

Another factor to be considered in relation to assessing *what* a child knows or can do is what might be termed the multi-faceted nature of what it means to be literate. Literacy is not a simple matter; it is complex and multi-dimensional (Hall, 2003). There are many ways of demonstrating

how one can read and write. It is therefore important to find a variety of ways of documenting this, in order to provide the best possible opportunities for children to engage in, and with, the process.

Conclusion

One of the most important issues to be considered in relation to any type of assessment is the suitability of the assessment procedure for the area being assessed, and for the assessment purpose. In other words, is the assessment approach really assessing what we believe reading and writing to be and will the resulting information be useful to inform the next steps of learning? All assessment procedures, and especially reading tests will have flaws and limitations. Hence there is a need to assess literacy learners in a variety of literacy situations and through a variety of modes, written and oral. For example, reading comprehension need not be assessed only via the written mode. Learners who have not yet mastered the print decoding process can still be assessed in relation to their ability to read narrative text. While much has been written about early intervention and early literacy assessment, particularly in relation to phonemic awareness – all focussing on print and decoding – attention to comprehension has perhaps received less emphasis. Recently researchers (Paris & Paris, 2003) using wordless picture books have created and tested assessment materials and procedures that can be used to assess young children's narrative comprehension, whether or not they can decode print. The research shows that this approach can complement existing assessments and link comprehension to teaching and learning. The arguments presented here are not intended to suggest that one assessment practice is better than another. Rather, we are arguing that multiple ways of describing children's literacy development must be in place to reflect the multi-dimensional character of literacy itself and to reflect the contestable nature of evidence. In particular, assessment practices need to be in place that demonstrate to children that their ways of showing how they read and write are important, and that their contributions to identifying next steps in their learning count.

This may be particularly relevant and timely in the current context of Irish primary education. The English curriculum published in 1999, both in terms of its content and recommended methodologies, highlights the role of pupils in their learning (NCCA, 1999a, 1999b). This curriculum also recognises a role for assessment that is an integral part of teaching and learning. It is five years since the initial implementation of this curriculum, and to date little consideration has been given to the nature of the

assessment practices best suited to the teaching and learning envisaged in this curriculum. In fact, debates and discussions about assessment have centred around whether schools should publish their summative assessment results and the need to provide teachers with suitable diagnostic tests. Formative assessment practices, the practices that are most closely linked with enhanced pupil achievement, have not yet been placed on the assessment agenda.

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10 The Development of the Trinity Early Screening Test for Dyslexia (TEST-D)

Pauline M. Cogan¹ and Ray Fuller

Introduction

Among those parenting or teaching dyslexics and in the Dyslexia research community it is generally agreed that early identification of the condition is a good thing. If such students are identified early, then the learning difficulty is not allowed to become complex. The gap between achievement and potential does not widen to the usual degree and the well-known self-esteem and/or behavioural problems do not generally arise. The social and emotional life of the student is enhanced and there is less strain on personnel and time resources in schools. Finally, there is less strain on the educational budget of the Department of Education and Science.

In conversation with teachers of older children who are displaying difficulties, the feeling of regret is often expressed that there is so little time allocated to deal with their difficulties or that the difficulties were not addressed earlier. Still other teachers (and school principals) are horrified when a late diagnosis of Dyslexia is made for a student in the upper reaches of primary school or even in secondary level education.

Early years teachers often comment that, while they can identify some difficulty or difference in a young child's performance, they lack an objective measure against which they can assess the child.

For the above reasons it can be said that it is a good idea to develop an early screening test to predict which children will be at risk for Specific Learning Difficulties during their lives.

There is a rich body of evidence from many parts of the world that there are several early signs of Dyslexia which can be detected in young school children. Among these can be numbered difficulties with naming, pronunciation, syntax, repetition, memory, rhyme, phonemes and visual and motor skills.

The development of the Trinity Early Screening Test for Dyslexia (TEST-D) is an attempt to answer the needs of teachers in relation to early identification of those at risk for Dyslexia. In so doing, it follows an

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important recommendation of The Task Force on Dyslexia (2001), which is that the diagnosis of Dyslexia should be a staged process. The child should first be identified as being at risk for the condition when his early school performance is assessed. Later the same child should receive a full psycho-educational assessment and be diagnosed as having learning difficulties of a specific (or general) nature or no difficulties as the case may be.

There are a few main theories as to what causes Dyslexia, a condition which may include visual, phonological, motor, linguistic, memory and attention deficits. TEST-D takes the view that Dyslexia can be expressed in any of these areas and so has developed a wide battery of short sub-tests to identify the many early signs of Dyslexia in young school goers.

The Target Population

It is a good idea to try to predict as soon as possible which children will suffer from learning difficulties sometime in their school career. Since Irish children enter primary school anytime from the age of 4 years to 6 years, the target population for the sub-test battery is from age 4 years to 6.5 years. This takes in the classes of Junior and Senior Infants and some children in First class.

Sensitivity to Age and Development

Children of these ages differ greatly in development; the sub-tests must, therefore, be sensitive to the age and particularly the level of development of the child. For this reason there are gradations of difficulty within subtests and between subtests. For example, the early items in a subtest may be quite easy while later items may be more challenging. Further into the test battery the processes may be more demanding.

The Sub-Test Battery

TEST-D contains a wide battery of subtests which check for level of skill in areas known to be predictive of Dyslexia in young school children. For example, phonological acquisition, the various kinds of memory and visuo-motor skills are examined. The battery is designed to be colourful, lively and enjoyable for children to do.

Two Phases

There are two phases in the project to develop the TEST-D, Phase 1 and Phase 2.

Phase 1 is when the child is initially tested on the battery of subtests; that is, when he/she is aged between 4 and 6 years. Children from all areas of advantage and disadvantage and across socio-economic groupings are selected at random in their schools to receive a battery of tests which are appropriate for their age/level of development.

Phase 2 is when the child turns 8 years of age. Forty percent of the children assessed in Phase 1 (including the 20% who generally scored lowest) will be called back for a full psycho-educational assessment when they turn 8 years of age. In this way it can be determined if the child has a Specific or General Learning Difficulty (or no difficulty). A look back to the performance of these children at Phase 1 (when they were aged between 4 and 6 years) will indicate which of the subtests correctly identified the dyslexic children.

The Predictive Subtests

Two forms of statistical analysis will be performed to identify which of the battery of subtests are predictive of Dyslexia. These are *Stepwise Regression Analysis* and *Factor Analysis*.

Stepwise Multiple Regression identifies the subtests administered at Phase I contributing most variance to the reading scores at Phase 2.

The second statistical analysis used at this stage is called Factor Analysis. This form of analysis is based on the principle that highly correlated test scores can be combined together into 'factors'. Factor analysis allows us to reveal the structure in the relationship between the subtest scores. It is also a data reduction tool to identify useful predictors. Data reduction is necessary because, although we may have a test (with many subtests) that identifies children with Dyslexia, we must reduce the number of subtests necessary to include in the TEST-D down to something more manageable for use in the classroom.

These processes will allow us to develop prototype 1 for TEST-D.

National and International Interest

There has been a great deal of interest in the development of TEST-D at national and international level. An outline presentation of the project to develop TEST-D also excited significant interest from those present at the British Dyslexia Association Annual Conference. The interest and support for the project, in particular from the INTO, has had a dynamic effect on the progress of the test development. In February 2003 this project was awarded the Sean Brosnahan Memorial Award for Research into

Educational Difficulties. After an article about the project appeared in IN TOUCH magazine (Cogan, 2003), over 800 expressions of interest from active and retired teachers were received in just two months. It was from this expression of interest that the test administrators for the pilot and main studies were drawn.

The Pilot Study

The pilot study to develop TEST-D took place in the Greater Dublin Area between February and November 2004. 19 trained Primary School teachers undertook to come for training in the rationale and administration of the test battery. A training manual was produced to guide test administration. 95 children aged 4 to 6.5 years participated in the study. The aims of the pilot were to gain information about:

- age appropriateness of the individual subtests;
- practicalities and logistics of the test suite;
- scaling and floor-ceiling effects in subtests;
- test reliability.

The pilot study provided us with a refined screening system for the main study.

The Main Study

In the main study 200 teachers are engaged in administering the subtests to children chosen at random from 200 schools. The children come from areas of advantage and disadvantage and from all socio-economic groupings. Each teacher obtained data from between 2 and 6 children. It is expected that the main study will deliver a full matrix of data from over 1000 children (roughly equal numbers of males and females). At the time of going to press about half of the subtest battery has been administered. The test administrators report high interest from the children who love carrying out the tasks. It is expected that the full test battery will have been administered by June 2005.

The results from the main study will allow us to identify those children for participation in Phase 2.

Timeline for the Production of Prototype 1 of TEST-D

About one year after receiving the battery of subtests, selected children who have reached eight years of age will begin to receive a full assessment using WISC and WORD. Each year for the next two years as the younger children turn eight, this process will be followed. The predictive battery for the whole participant pool is expected to be identified by the end of 2008.

Further Study

This process of identifying the important predictors of Dyslexia is limited by the resource demands of fully assessing the entire sample of participating children in Phase 2. Hence, the planned use of only 40% of the original sample in Phase 2. It would, however, strengthen the project if we could have the resources to run diagnostic tests for Dyslexia on all 1000+ children in our main study and use that sample to identify the key predictors in the test battery.

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11 Reading Processes in Irish-English Bilinguals: Evidence from the Stroop Interference Effect

Fiona Lyddy¹, Brion O’Loinsigh, and Christine Parsons

Introduction

One of the most obvious difficulties facing the beginner reader in the Irish context is encountering two apparently similar languages, Irish and English, within a relatively short time frame. While the Irish and English written languages are superficially similar, they hold conflicting rules that convert orthography (written forms) to phonology (sound forms). Interlexical homographs (words which share spelling but have different pronunciations and meanings in two languages) illustrate this point; written words such as *teach*, *bean*, and *fear* for example elicit different pronunciations and meanings in Irish and English. Many shared words and segments requiring different reading rules exist in these languages and require an early appreciation of multiple orthography-phonology correspondences. Conflicting correspondences are evident throughout the languages as there are few sound-spelling mappings that are shared by words in both languages. Furthermore, initial mutations in Irish require the reader to recognise words across orthographic variations (and phonological variations in speech). The two major classes of initial mutation are lenition (the *séimhiú*) and eclipsis (*urú*). The former typically involves conversion to a fricative and is written by an additional ‘h’ after the consonant, a convention that replaced the use of a diacritic. Eclipsis involves voicing of voiceless stops, nasalisation of voiced stops and prefixing of ‘n’ to vowel-initial words and takes a variety of forms, depending on the concomitant consonant. There are also t- and h- protheses on vowel-initial words. These mutations require the reader to recognise words across changes in pronunciation and mutated spelling. For example, the word for boat, *bád* is eclipsed in *i mbád* and aspirated in *trí bhád*, the root /b/ sound replaced by /m/ and /v/ respectively.

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The Irish written language has a relatively predictable orthography, in that much sound information is provided for reading (spelling may be more ambiguous). The use of a diacritic (*síneadh fada*) over vowels to indicate length and the additional distinction between consonants that are slender (*caol*) or broad (*leathan*) further aids pronunciation (for example *bád* with a broad d means a boat while *báid* with a slender d means boats; the 'á' signals a long vowel a).

By contrast, in written English the relationship between orthography and phonology is inconsistent for both sound-spelling and writing-sound relationships. For example, the sound /ai/ can be written as in 'mine', 'pie' or 'my' and the grapheme 'a' pronounced as in /fate/, /fat/ and /father/. There are also peculiarities of spelling, with regular patterns, as in 'hint', 'rave' and 'leak' confounded by irregulars like 'pint', 'have' and 'steak'. There are highly unusual representations, often derived from imported words, such as 'yacht', 'island' and 'ghost' (examples from Harley, 1995). Furthermore, the English lexicon includes homographs (spellings that elicit several pronunciations and meanings, e.g. 'bow', 'row' and 'tear') and homophones (different spellings for the same sound, such as right/ rite/ write). Such patterns mean that many words cannot be read using a 'sounding-out' strategy only. The problems presented for the developing reader are not as evident in other, more transparent, languages, such as Serbo-Croatian and Italian, and contrast markedly with patterns of reading development in non-alphabetic script languages, such as those employing a syllabic, consonantal or logographic-morphemic script. (The interested reader is referred to Harris and Hatano (1999) for a comprehensive treatment of these issues.) The orthography has further implications for bilingual readers, who must accommodate another, perhaps incompatible, set of correspondences from their other language. Taking the Irish-English example, the superficial similarities in script may present further challenges.

One way in which the relationship between bilinguals' orthographies has been studied involves the use of the Stroop interference effect (Stroop, 1935). The classic Stroop colour-naming task requires the subject in an experiment to name the colour in which a word is printed when the word is itself a colour term. When the word meaning is congruent with the colour of the print (e.g. the word 'red' printed in red ink), response times are faster than both the incongruent counterpart (e.g. the word 'blue' written in red ink, requiring the response 'red') and pure colour naming. The Stroop task has been used to study automaticity of reading processes and attentional

control as well as the relationship between languages in bi-/multilinguals (see MacLeod, 1991, for an overview). While explanations of the effect continue to be debated, one account of Stroop interference proposes that it reflects the competition of two responses, where faster word reading interferes with slower colour naming. The speed of reading reflects its automaticity in skilled readers, ensuring that the read word activates meaning quickly, interfering with colour naming when the stimuli are incongruent. The emergence of the effect in early childhood may reflect increasing automaticity as reading competence improves (e.g. West & Stanovich, 1978). This has led to considerable interest in the relationship between Stroop interference and reading skill in beginner and competent readers.

The bilingual Stroop task involves the presentation of stimuli in two languages, with subjects required to respond in both languages across a series of word-colour congruent and incongruent conditions. The effect is more controllable in a bilingual's dominant language (Tzelgov *et al.*, 1990; Altarriba and Mathis, 1997) and is more pronounced within languages (MacLeod, 1991). Intralingual interference is demonstrated when the language of the written words is also the language of response. Interlingual interference occurs when the language of the written words and that of response differ. Interlingual interference has been found to emerge robustly across a range of language combinations (see MacLeod, 1991; Preston and Lambert, 1969; Dyer, 1971) and is generally greater from the dominant (L1) language (MacLeod, 1991). This assumes that the dominant spoken language is also dominant for reading. A study by Gerhand *et al.* (1995) found intralingual interference for Scots Gaelic (L1) and English, with interlingual interference demonstrated only for English words with Gaelic responses. This was interpreted as reflecting the dominance of the English written language (in that it was more automatic) in these Gaelic L1 speakers. The precise effects have been shown to vary with language similarity (e.g., Fang *et al.*, 1981; Biederman and Tsao, 1979), and dominance of the response language/relative proficiency (e.g., Mägiste, 1985).

The Stroop effect should emerge only with automaticity of word recognition, as it is the automatic triggering of meaning that generates interference in the incongruent Stroop condition. If the conceptual links between two languages have not yet formed (as in novice bilinguals e.g., see Mägiste, 1985), the interlanguage Stroop effect should not emerge (particularly from the non-dominant language). Analysis of the precise

patterns of interference may therefore prove informative with respect to the degree of automaticity and the relative status of reading in each language as well as issues of lexical relationships between them. To this end, the following provides an overview of some Stroop interference data from Irish-English bilinguals, with contrasting levels of Irish-English language competence.

General Method

The same general method was followed for the two experiments described. Bilingual adult students completed a series of Stroop and colour naming conditions. Four Stroop conditions presented Irish or English words for congruent and incongruent conditions, as illustrated for one colour response in Table 1. Rapid colour naming was also completed. Subjects responded in Irish or English.

TABLE 1 EXAMPLE OF STROOP CONDITIONS LEADING TO THE RESPONSE 'RED'

Language of task	Congruent		Incongruent		Response
	Word	Colour of print	Word	Colour of print	
English	Red	Red	Blue	Red	Red
English	Red	Red	Blue	Red	Dearg
Irish	Dearg	Red	Gorm	Red	Red
Irish	Dearg	Red	Gorm	Red	Dearg

Stimuli were presented on white A4 card, with fifty items for each task. The selected colour words were chosen so that they required similar length responses in each language. The colour terms used were: white/bán, black/dubh, red/dearg, green/glas and blue/gorm. Order of items was randomised across test cards. Subjects were instructed to respond in Irish or English for each of the tasks. A rapid colour naming task was administered first yielding baseline colour naming times. The Stroop tasks were then presented, with order counterbalanced over subjects. Subjects were timed as they named the colours aloud, from left to right row by row for each task card. Timing commenced with a signal to start and stopped on the last item. Data refer to response time (RT) in seconds for a fifty-item task.

Experiment 1

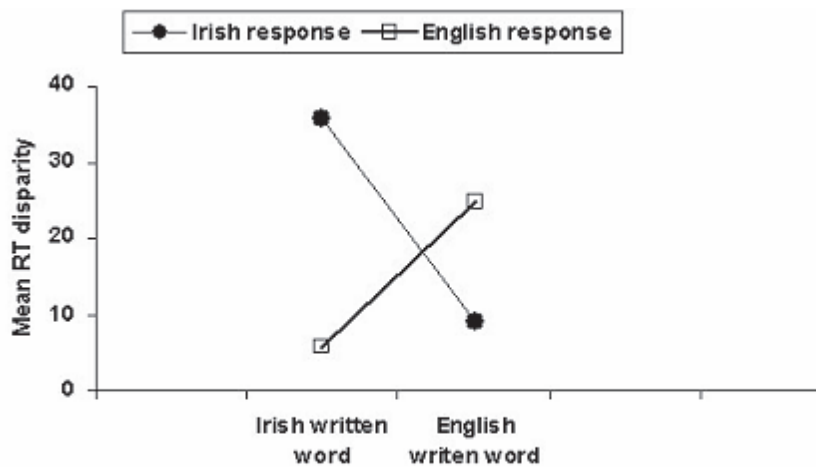
In the first study, English L1, competent Irish speakers ($n=50$) were selected for participation based on reported use of Irish, Leaving Certificate performance and performance on a pre-test. Average age was 21 years (male:female = 1:3); all were third level students. Little difference was observed between basic reading speed in Irish and English, as derived from the word-colour congruent tasks. Colour naming was significantly faster in English ($t(48)=5.46$, $p=.01$). On the Stroop tasks, overall response times were significantly slower in Irish ($F(1,48)=11.1$, $p=.01$), while Irish language tasks generated faster responses than the English tasks ($F(1,48)=10.35$, $p=.01$), reflecting poor performance for Irish responses on the English task. As might be expected the incongruent conditions generated slower RTs than the congruent, particularly affecting responses in Irish. There was no significant difference due to response language on the English incongruent condition, suggesting the relative disadvantage of responding in English for this task. Basic interference scores were derived as the RTs for incongruent minus congruent conditions across the two languages of stimulus and response. The interference scores thus take account of relative differences in responding and can be compared across the two experiments. Figure 1 graphs the data for Experiment 1.

Figure 1 shows that the condition that produces the greatest interference score, that is the greatest RT difference between performance on the congruent and incongruent conditions, is where Irish written words require Irish responses (i.e., *DEARG* written in red, as against *GORM* written in red, where the response is the colour term in Irish i.e., '*dearg*'). A large disparity is also apparent for English written words requiring English responses. These two conditions represent interference within a language or intralingual interference and the differential reflects the relatively fast responses on the congruent conditions. Far less interference is apparent in the two cross-language conditions, that is Irish written words requiring responses in English and English written words requiring responses in Irish. Here the congruent conditions involve a translation effect; e.g., for RED written in red ink, respond '*dearg*'. The relative difficulty already inherent in this task (even when congruent) means that there is a relatively less detrimental increase in difficulty for the congruent version of this task, e.g., RED written in blue, respond '*gorm*'.

The strongest interference comes from within-language conditions. The intralingual interference particularly affects the Irish conditions, showing a starker disadvantage for responding in Irish for incongruent

Irish stimuli. The intralingual effect is stronger than that of interlingual interference, with Irish responses showing more interference for both in Experiment 1. A modest but significant interlingual effect is evident for both languages, and is again stronger for responses made in Irish on the English task, i.e. interference from the dominant language.

FIGURE 1: INTERFERENCE SCORES FOR STROOP CONDITIONS: EXPERIMENT 1



Experiment 2

In Experiment 2, 60 fluent Irish speakers (average age 20 years, male:female = 5:7) participated. One third were L1 Irish speakers, half had an L1-Irish parent, and all completed Irish at Honours level in the Leaving Certificate (with a third achieving A grades). 51 of the 60 were studying Irish at third level. This group therefore represents a sample of fluent Irish speakers and readers.

Basic colour naming was significantly faster for English responses ($t(58)=6.5$, $p=.01$), though the mean difference is smaller than that observed in Experiment 1. Again reading speeds in the two languages were comparable, with faster overall performance than seen in Experiment 1, particularly with regard to Irish responses.

Across the Stroop conditions, responses were faster in English ($F(1,58)=20.4$, $p=.01$), while responses were similar for English and Irish written words overall. Again the incongruent conditions generated slower

RTs than the congruent, particularly affecting responses in Irish. There was no significant difference due to response language on the English incongruent condition, again suggesting the relative disadvantage of responding in English for this task.

Figure 2 graphs the interference scores for Experiment 2. The pattern of intralingual interference is similar to that seen in Experiment 1, with slower Irish responses to Irish written words. However the interlingual effect is reversed in Experiment 2. Here Irish responses to the English written words show less interference than English responses to the Irish words; interference is stronger from the Irish written language.

FIGURE 2: INTERFERENCE SCORES FOR STROOP CONDITIONS: EXPERIMENT 2

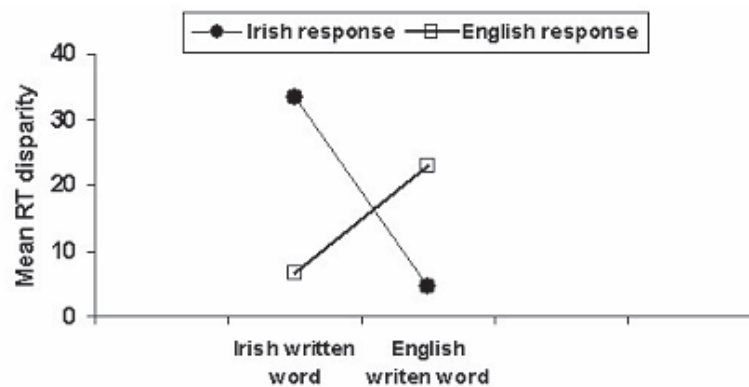
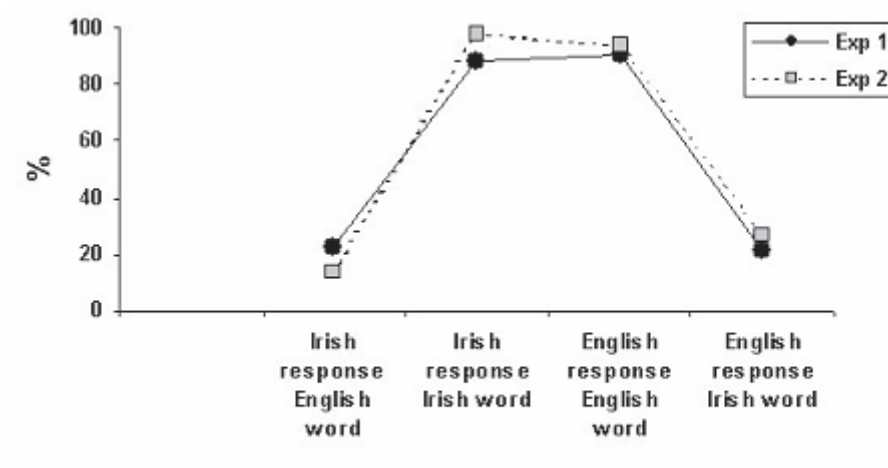


Figure 3 graphs interference scores for the two groups taking into account the differences in pure colour naming for the two languages and for the two language groups. From the left of the Figure, differences can be seen on the first two Stroop conditions. For Irish responses to English words, the more fluent (Experiment 2) group can be seen to have encountered less interference from the English word. The second data points represent interference for Irish responses to Irish words. Here the Experiment 2 subjects can be seen to be at more of a disadvantage, even taking into account their faster colour naming times. They show more intralingual interference within the Irish language than the Experiment 1 group, although both groups show a stronger intralingual effect for Irish relative to English. These differences are statistically significant.

FIGURE 3: INTERFERENCE CONTROLLING FOR COLOUR NAMING RT DIFFERENCES



Thus when responding in English the two groups behave comparably but differences emerge when examining performances that require responses to be made in Irish. For both groups however intralingual interference is by far the stronger effect.

Conclusions

This study has demonstrated typical Stroop interference both within and between languages for Irish-English bilinguals. Reading Irish stimuli shows automaticity for both groups; interlingual interference is evident when English responses were made on the Irish, incongruent task relative to the Irish, congruent task (e.g., where *dearg* was written in blue ink, or 'gorm' was written in blue ink, requiring the response blue). In Experiment 1, the interlingual effect was stronger again for responses made in Irish on the English task, i.e. from the dominant language. In Experiment 2, the interlingual effect was stronger for English responses given Irish written words. The interlingual effect was more modest than that generally reported, however (see MacLeod, 1991), perhaps suggesting less interaction between the two languages than generally observed for balanced bilinguals.

In line with the wider literature on the bilingual Stroop, stronger intralingual interference was apparent. For both groups overall response

times and interference scores were greater for the Irish language, despite similar base reading rates for the two languages. This may reflect poorer attentional control for that language. Further research is required to pull apart the effect of reading automaticity from that of attentional control.

These findings compare to those of Gerhand *et al.* (1995) who found intralingual interference in English and Scots Gaelic, but interlingual interference only for Gaelic responses to English stimuli. This pattern in Gaelic L1 bilinguals was interpreted as resulting from the superior automaticity of English written words, as this subject group had far less experience of their native language when it came to the written form. In the current study, the fluent speakers in Experiment 2 would have had substantial exposure to written as well as oral Irish, which may underlie the effect seen here.

Interpretation of these data must consider the characteristics of this subject group. All subjects were in third level education and thus even the less fluent group would have had good written Irish skills. An effect of disparity between oral and written skills similar to that reported by Gerhand *et al.* (1995) might be more apparent in a more typical sample of L1 Irish speakers. Such studies therefore need to consider not just spoken ability but language ability across a range of tasks.

While there was a substantial sex bias in the sample, no sex difference was observed on any of the measures here and differences are not generally apparent in Stroop studies that have considered individual differences (e.g. Golden, 1974; MacLeod, 1991). This bias derived from the study's inclusion criteria; more females than males were eligible for participation based on the criteria detailed above. This reflects Leaving Certificate trends; according to a report for the National Council for Curriculum and Assessment (Elwood, 2002), 65.6% of those taking the Higher Level Leaving Certificate in Irish in 2001 were female and 82% of females achieved honours grades, compared to 74% of male candidates. Interestingly, individual differences in response times apparent in this study were predicted by Leaving Certificate performance, with speed of Irish responses overall positively associated with Leaving Certificate grade.

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Learning to Read and Reading to Learn

This volume contains papers presented at the 2004 Conference of the Reading Association of Ireland. The conference comprised papers, workshops and discussion of the place of literacy in school curricula. The papers presented here are:

- **Reading to learn: A major social and educational issue**
Mark Morgan, St. Patrick's College, Drumcondra.
- **'Best leave it between the book and the hearer'**
Finian O'Shea, Church of Ireland College of Education.
- **Raising boys' achievements in literacy**
Eve Bearne, Homerton College, University of Cambridge.
- **Supporting the emergent reader through research-based integrated early literacy instruction**
Martin Gleeson, Mary Immaculate College, Limerick.
- **Phono-Graphix: Rethinking the reading curriculum**
Helen McLernon, James Ferguson and John Gardner, Queen's University of Belfast.
- **Learning to read through science**
Virginia Muller and Anne Tapp, Saginaw Valley State University.
- **Reading achievement in children from disadvantaged areas: Views of teachers and parents**
Eemer Eivers, Educational Research Centre, Dublin.
- **Teaching diverse students to read**
Timothy Blair, University of Central Florida.
- **Assessing literacy practices**
Siobhán Cahillane-McGovern, St. Patrick's College, Drumcondra and Kathy Hall, Open University.
- **The development of the Trinity Early Screening Test for dyslexia**
Pauline Cogan and Ray Fuller, Dyslexia Research Group, Trinity College Dublin.
- **Reading processes in Irish-English bilinguals: Evidence from the Stroop interference effect**
Fiona Lyddy, Brion O'Loinsigh and Christine Parsons NUI, Maynooth.



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