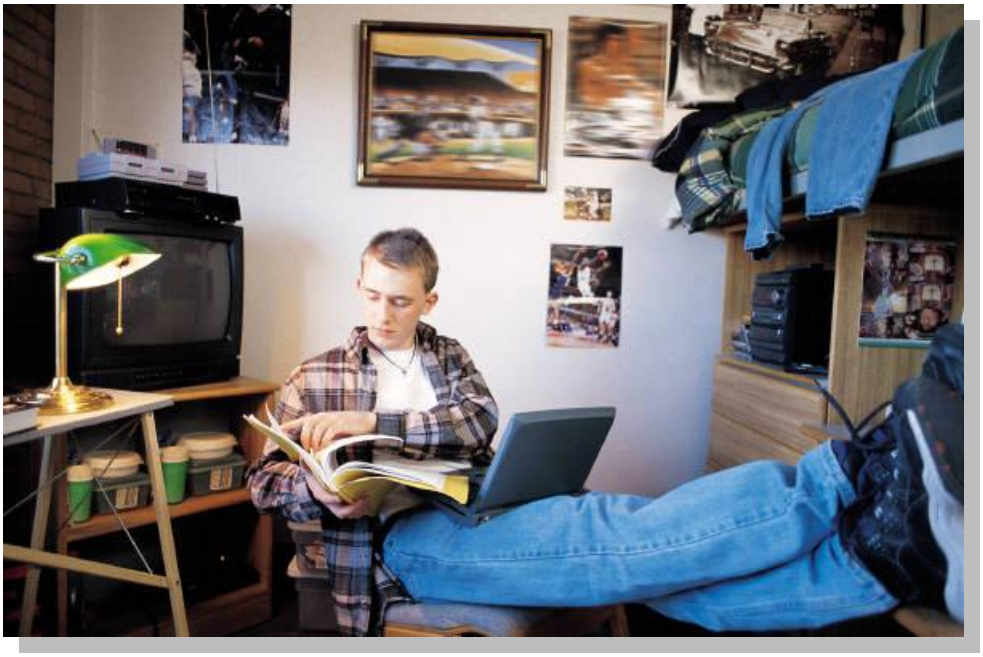
An tSeirbhís Náisiúnta Síceolaíochta Oideachais | National Educational Psychological Service

Effective Interventions for Struggling Readers



A Good Practice Guide for Teachers

This NEPS Good Practice Guide was developed by educational psychologists. It is based on current knowledge in this area. It is intended as a guide only. Not all the suggestions here will apply to any one student or situation.

NEPS LWG 2012

Section 1 Introduction

1.1 Who is this Guide for?

This is a guide for teachers, particularly learning support, and resource teachers and teachers in special education settings. While classroom teachers retain overall responsibility for a student's teaching and learning, learning support and resource teachers often have a key role in giving additional assistance to struggling readers. This guide has been developed by psychologists from NEPS and aims to help teachers in primary, post-primary and special schools, by sharing information about evidence-based approaches to teaching reading.

This guide covers the age range 6 years to 18 years. It also encompasses all students with reading difficulties, including those who have specific learning difficulties (dyslexia) as well as those who have made generally poor progress in reading and may or may not have additional general learning difficulties. Information here can be applied to students from disadvantaged backgrounds, minority groups and to students with reading difficulties for whom English is not a first language. While the full range of literacy involves more than just reading, the focus here is particularly on reading skills: the ability to decode and understand text.

1.2 How do I Use the Guide?

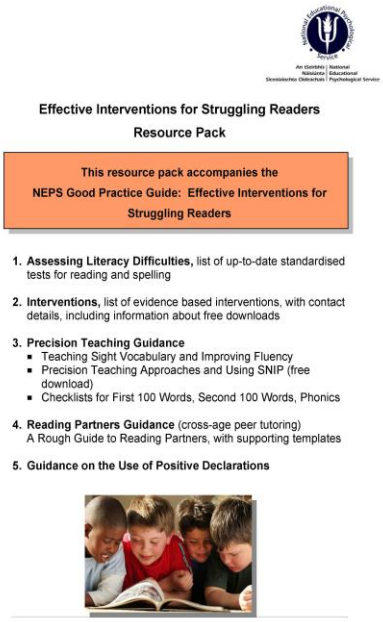
The guide shares research findings over the last 15 years about the effective teaching of reading. It is divided into the following sections:

- Section 1- Introduction
- Section 2- Elements of Effective Reading Instruction
- Section 3- Measuring Progress- What is Possible?
- Section 4- Enhancing Progress for Struggling Readers
- Section 5- Effective Reading Instructors
- Section 6- Five Evidence-Based Interventions
- Section 7- Data from Action Research in Waterford

Throughout this guide, key messages for teachers are highlighted in yellow textboxes. If you do not want to read through the more detailed information, you can move quickly from box to box, picking up these key messages about effective teaching of reading.

1.3 Resources to support this Good Practice Guide

A range of resources have been developed to support this Good Practice Guide and these are presented in the accompanying resource pack.



Effective Interventions for Struggling Readers

Resource Pack

This resource pack accompanies the NEPS Good Practice Guide: Effective Interventions for Struggling Readers

1. **Assessing Literacy Difficulties,** list of up-to-date standardised tests for reading and spelling
2. **Interventions,** list of evidence based interventions, with contact details, including information about free downloads
3. **Precision Teaching Guidance**
   - Teaching Sight Vocabulary and Improving Fluency
   - Precision Teaching Approaches and Using SNIP (free download)
   - Checklists for First 100 Words, Second 100 Words, Phonics
4. **Reading Partners Guidance** (cross-age peer tutoring) A Rough Guide to Reading Partners, with supporting templates
5. **Guidance on the Use of Positive Declarations**

Throughout this Good Practice Guide, there are links to relevant materials in the resource pack, linked to the relevant literature and guidance. However, if you want to move directly to the downloadable resources, follow the link below.

Click here to access the Resource Pack

Effective Interventions for Struggling Readers

Resource Pack

1.4 What sources of evidence were used?

We already know a great deal about teaching reading to students generally, and increasingly there is a growing knowledge base about how to help students who struggle with reading. This pack collates research evidence from a range of sources and suggests how this evidence can be applied to teaching practice.

The synthesis of research findings reported here, is drawn from twelve studies, all completed within the last 15 years. These studies were characterised by rigorous methodological approaches.

In order that teachers can evaluate the significance of the key studies, details about the authors, their affiliations (and funding, if relevant), the aims and scope of each study and the sources of information and selection criteria used are set out in the **Appendix 1**. Reference is also made to supplementary studies, where additional information may be relevant.

A word of caution!

The quality of research varies greatly. As Brooks et al (1999) stated, it can vary 'from the meticulous to the appalling' (p51). Be cautious about interventions and programmes that are supported only by glowing 'testimonials'. Read all research with a critical eye and look for rigorous standards in data collection.

Section 2 Elements of Effective Reading Instruction

2.1 Elements of Effective Reading Instruction

In terms of the content of effective reading instruction, it is clear that the following elements should all form part of an effective programme (National Reading Panel (NRP), 2000; Scammaca et al., 2007; Singleton, 2009; Kennedy et al., 2012; Eurydice Network, 2011).

- Phonemic awareness and the teaching of phonics
- Decoding and word studies, including the learning of a sight vocabulary
- Language development, to include vocabulary development
- The explicit teaching of comprehension strategies
- Meaningful writing experiences
- The development of fluent reading by reading and rereading familiar texts
- A wide-range of reading materials
- Opportunities for both guided and independent reading

Beyond this core content, it is clear that those who struggle with reading need enhanced teaching, and for many struggling readers, and particularly readers with dyslexia, the phonic element is most important. Singleton (2009) emphasises the need for multi-sensory programmes that target phonic knowledge.

Teachers need to ensure that students are given a healthy, balanced diet of literacy activities. However, it is not the remit of the learning support/ resource teacher to deliver all elements cited above. Shared reading, the teaching of subject specific comprehension skills and vocabulary building should all be happening in the mainstream classroom or subject lesson. The task of the learning support teacher is to identify the area of greatest deficit or need. In our experience, the areas of greatest need for the majority of students with reading difficulties are phonic knowledge, word reading and reading fluency.

2.2 Systematic Interventions- Choosing your programme

In considering the needs of struggling readers, Feldman (2004) suggests selecting '*a research-based, validated curriculum as the programme "anchor*"' (p1). It is not the intention of this paper to review individual intervention programmes, as this has been done systematically by Brooks (2007). Programmes suitable for very young children, may be wholly inappropriate for older readers. Additionally, interventions may need to target particular aspects of reading; one student may need help with reading comprehension (for example, an inference training programme) while another may need explicit teaching of particular phonics. Therefore, teachers need to seek out interventions relevant to their particular context and the individual needs of the student.

Teachers will find that evidence-based programmes give students the best chance of success. For a full and comprehensive review of programmes across the age range see the detailed work of Brooks (2007) or Shanahan (2005). Please note an up-dated version of the Brooks publication should be available in autumn 2012. The evidence-based programmes that have been proven successful in Irish schools, in recent years are described in Section 6.

Section 3 Measuring Progress- What is Possible?

3.1 Measuring Progress

There is an increasing emphasis on evidence based interventions: interventions where there is research evidence to support the efficacy of the approach, (Brooks, 2007; Scammacca et al., 2007; Slavin et al., 2008). Standard scores are seen as the most statistically correct way of measuring progress, as they are adjusted to take account of the student's age, which is why they are often used in academic research. Brooks (2007) sets out various methods of measuring progress in reading and sets a standard by which literacy interventions for failing readers can be measured. His study reports on ratio gains.

What are ratio gains?

A ratio gain is the amount of progress a student makes in reading age, divided by the time spent between pre and post intervention. Calculating ratio gains therefore involves using a test that gives age equivalent scores. If a student makes one year's progress in word reading over the course of one year, then the ratio gain is 12 months (progress) divided by 12 months (time spent) giving a ratio gain of 1.

How much progress?

Brooks (2007) suggests that we should be aiming for students to make ratio gains of 2. In effect, Brooks argues, ***'Good impact - sufficient to at least double the standard rate of progress - can be achieved and it is reasonable to expect it'*. (p32).**

Ratio gains of more than 2 are now set as the standard to which to aspire, as '*many schemes now produce impacts of this order or more*' (Brooks, 2007, p30). This would imply that we should be aiming for our struggling readers to make two years progress in one year. It is helpful to be aware that it is

relatively easy to achieve strong ratio gains over a short period of time. For example, (a ratio gain of 2 over a 3 month period, is 6 months progress in 3 months) than it is to achieve similar ratio gains over a longer period of time (a ratio gain of 2 over a year is two years progress in one year).

It should be noted that methods used to report progress in research, may not be best suited to reporting progress to parents. The DES encourages schools to report results of standardised tests using STEN scores or standard scores. For more information on reporting test results see Assessment in the Primary School Curriculum,
www.**ncca**.ie/uploadedfiles/publications/**assess**%20%20guide.pdf

And for information on assessment at post-primary level, see;

www.ncca.ie › ... › Curriculum and Assessment › Post-Primary Education

3.2 What is Possible? - Reaching all Students

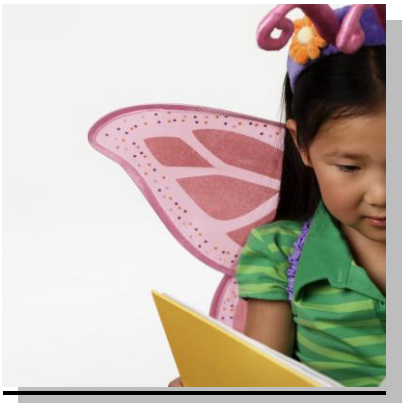
In Ireland, a study in 2003 found that children in schools with designated disadvantaged status performed poorly on nationally standardised tests, with almost 30% of students scoring below the 10th percentile (Eivers, Shiel and Shortt, 2004). Yet, research shows that virtually all children can be reached by effective literacy practices. MacKay (2007) in reporting on the ten year project in West Dunbartonshire, aimed to achieve, '*the eradication of illiteracy from an entire education authority'* MacKay's project, in the second most disadvantaged authority in Scotland, involved some 60,000 students. This multi-strand literacy initiative addressed not just the effective teaching of reading in the ordinary classroom, but the effective support of struggling readers. At the end of the 10 year project, '*only three pupils remained with Neale Analysis scores below the 9y 6m level of functional literacy'* (p31).

The delivery of evidence-based interventions has been found to be effective, even with groups who traditionally have struggled to attain literacy. For example, Nugent (2010) found that children from the Travelling Community made over a year's progress in reading skills over a three month intervention period, while Kennedy (2010) found students in schools with disadvantaged status made very significant progress when their teachers engaged in focused professional development.

Solity (2000) argues that '*the single most significant change needed to create a climate for success requires that all those working in the education system assume that all children can learn and reach age –appropriate targets when given the right teaching'*, (p56). This raising of teacher expectation is an important feature of raising achievement, (Eivers et al., 2004).

There is good evidence that interventions that are well targeted and well delivered can be effective with students from a range of backgrounds and with a range of abilities. The goal of eradicating illiteracy may be achievable! Teachers need to have high expectations of their students.

Section 4 Enhancing Progress for Struggling Readers



4.1 Structured Teaching

When it comes to failing readers, ordinary class teaching is not enough and specialist interventions are required (Brooks, 2007; Singleton, 2009). Structured specialised tuition for failing readers is more effective than eclectic approaches (Swanson and Hoskyn, 1998). This is not to suggest that there should not be a balanced approach to the various elements of a literacy curriculum (see section 2) but to emphasise the importance of targeted teaching that is structured, explicit and systematic. Such teaching can involve the purposeful use of a range of strategies.

The NRP report (2000) repeatedly refers to the effectiveness of systematic approaches, particularly in the teaching of phonology. Singleton (2009) emphasises the need for '*instruction that is systematic and intensive'* (p8). Singleton goes on to define systematic teaching more closely as, '*structured, cumulative and sequential'* (p20). Lingard (2005) also argues for '*clearly focused intervention'* (p75) and demonstrates how this can be done for students starting post-primary school with low attainments.

Once an evidence-based programme is selected, it should be taught with fidelity. A highly structured, systematic approach has been found to be the most effective.

4.2 Systematic Teaching of Phonics

It has also been argued that using a predominantly synthetic (rather than analytic) phonic approach is most effective (Macmillan, 1997; McGuinness, 1997; Solity et al., 2000; Ehri, Nunes, Stahl and Willows, 2001). The National Reading Panel (NRP) gave a more nuanced interpretation, suggesting that synthetic phonics had the most impact on those with reading difficulties and those from disadvantaged communities. More recently Torgerson, Brooks and Hall (2006) have argued that both analytic and synthetic phonics approaches are equally valid. There is however, good agreement that the structured and systematic teaching of phonics is most important (Rose, 2006; Torgesen et al., 2006; NRP 2000).

What is the difference between synthetic and analytical phonics?

These are two different approaches to teaching the sounds that letters make. The NCCA provides the following definition: *Synthetic phonics* emphasises a part-to-whole approach, letter by letter phonological decoding; the child learns to sound and blend the sequential letter sounds. Sounds are learned in isolation and blended together (/c/a/t/). In *analytic phonics* the sounds are not learned in isolation but a phonic element is identified from a set of words in which each word contains the particular sound to be studied (e.g. how are these words alike? *pat, park, push, pen*). This is a whole-to-part approach. **Literacy in Early Childhood and Primary Education (p128).**

The synthetic approach tends to emphasise the segmenting and blending of sounds early on in reading development, while the analytical approach tends to start with the whole word and break it down.

4.3 Teaching Sight Vocabulary

Many struggling readers have phonological processing difficulties (Castles & Coltheart, 1993; Stanovich, Siegel & Gottardo, 1997) and there is evidence

that skilled readers access a store of words or visual patterns when reading (Baron and Strawson, 1976; Coltheart, 1978; Henderson, 1982). High frequency words are words that occur frequently in text, for example *the, what, this*. Automatic recognition of these words (also called *having a sight vocabulary*) helps students to improve fluency, make use of context clues and focus more on comprehension than on decoding. Many high frequency words have irregular spelling patterns and sounding out these words can be pointless and frustrating.

Struggling readers often read less, have less exposure to print and therefore have limited sight vocabularies (Rief and Stern, 2010). The more a student reads, the greater the chances are that the student will recognise frequently occurring words automatically. We recommend that teachers teach high frequency words to struggling readers to the point of automaticity. (See Section 4.6 for more information).

Click here for advice on

Teaching Sight Vocabulary / High Frequency Words

E.W. Dolch created a list of 220 high frequency words. The following websites contain the Dolch list and related activities:

www.quiz-tree.com
www.theschoolbell.com
www.learningbooks.net
www.dolchsightwords.org

4.4 Small Group or 1:1 Tuition

Another consistent finding is that, for struggling readers, small group settings and individual tuition is more effective than larger groups (Swanson and Hoskyn, 1998; Vaughn, Gerten and Chard, 2000; Scammaca et al., 2007; Eurydice Network, 2011). For example, in reviewing European practices,

Eurydice concluded that '*Individual or small-group intensive instruction by reading specialists is essential when tackling reading difficulties*.' (p14).
The largest size of an effective teaching group, has been found to be three students (Vaughn et al., 2000). They also suggested that such small groups may be as effective as a one to one model, if the teacher was highly qualified. However, more recently, Singleton (2009) suggests that teaching can be effective in groups of up to four or five students, even when instruction is provided by non-teachers (as long as they are adequately trained).

Whether support should be on a withdrawal basis or delivered in class is an area of some dispute between researchers. Indeed, small group teaching can take place within the classroom, particularly if there is a team teaching approach or station teaching. Additionally, peer tuition, which can be delivered in-class, is also an effective approach. Indeed Slavin et al (2008) emphasised the importance of peer tuition approaches, particularly with teenagers.

However, Shinn et al. (1997) found that an in-class model of support, was not effective in raising the achievement of failing readers. While we cannot generalise on the basis of this one study, it is noted that many of the highly effective intervention programmes reviewed by Brooks (2007) are delivered in one to one or small group settings. An exception that is worth mentioning, is the ARROW programme, a computer based intervention that appears to be effective with teaching groups of five, Brooks (2007).

Some schools may need to rethink the arrangements for supporting students with reading difficulties. At present, there is evidence that the teaching of reading in groups of more than 4 or 5, are less effective approaches for the teaching of reading. This is not in any way to imply that these approaches may not be very beneficial for students with other types of needs (such as those needing support with social skills or language development). However, for the moment, the evidence is that effective support for struggling readers usually involves one to one or small group tuition.

The above discussion about the size and form of effective teaching groups, does not detract from our message that it is the class or subject teacher who has overall responsibility for the development of the student's literacy and support programmes should complement work already happening in the regular classroom.

4.5 Frequency and Duration of Intervention

The frequency of teaching inputs is important to educational success. Scammacca et al. (2007) argue for daily or near daily teaching sessions, as does Lingard (2005). Solity and his colleagues argued that practice of new skills should be distributed over time rather than massed into a particular time (Solity et al., 2000). Therefore, daily practice of 10 minutes (practice distributed throughout the week) is more effective than one hour of practice delivered in a block (massed). Rose (2009) also supports the concept of *'little and often'* (p14).

Additionally, it has been found that the duration of an intervention is not necessarily associated with outcomes. In fact, interventions that are of short duration, but intensive, may offer the most efficient approach, (Vaughn et al., 2000; Brooks, 2007). Brooks cautions about the need to carefully monitor the effects of interventions that last longer than one term. Interestingly, Singleton (2009, citing Truch, 2003) suggests that '*the rate of gain may decelerate quite rapidly for intensive interventions after the first 12 hours of intervention'* (p50). Again, this suggests that intensive interventions may deliver effective remediation within a relatively short time span.

Short, intensive bursts of intervention, with daily, targeted support, appear to be more effective than longer term interventions. Therefore teachers may need to think of their work in half- term or 6 to 12 week blocks.

4.6 Teaching to the Point of Automaticity

Automaticity in reading refers to the ability to read without occupying the mind with the low level detail of the task (such as sounding out), so that it is an automatic response pattern. This is typically achieved as the result of learning, repetition and practice. A difficulty for many students with emerging literacy skills is that the pace of teaching moves too quickly for them: they move on to new skills before emerging skills have been consolidated and developed to the point of automaticity. Given what we know about the importance of achieving this automaticity in reading tasks, it is not surprising that Vaughn et al. (2000) found that control of task difficulty (sequencing examples and problems to maintain high levels of student success) was a critical factor in successful interventions.

Teachers will want to ensure that students reach a point of automaticity in learning, before moving on to the next steps. This means checking that they have achieved speed and accuracy in the key skill area. Teachers will also want to offer learning activities where students can achieve high levels of success. We recommend that students should be achieving 95% success with accuracy and that learning should be revised weekly and monthly to ensure that it is retained.

4.7 Teaching Students to Read Fluently

Fluent reading refers to the ability to read orally with speed, accuracy and proper expression. The NRP (2000) point out that '*fluency is often neglected in the classroom'* (p11), but found that strategies that increase fluency have a positive impact on reading and particularly on reading comprehension. The most commonly used strategy to improve reading fluency is the reading and rereading of familiar texts. Opportunities to read aloud, with guidance from teachers, peers or parents, are also associated with the development of fluent reading. The value of daily reading aloud is also supported by Lingard (2005) and Shanahan (2005).

Student reading fluency is enhanced by reading and rereading familiar texts and reading aloud.

4.8 Assessment and Monitoring

In selecting an appropriate intervention for a student, teachers need to be aware of the student's key areas of deficit and select an intervention accordingly. A first step in assessment is discriminating between word reading and reading comprehension difficulties. It is suggested here that all struggling readers should be assessed on both measures, so that teachers can identify relative strengths and weaknesses. Further diagnostic tests, such as non-word reading tests, reading fluency tests, tests of vocabulary knowledge and tests of spelling skills will help to pinpoint the exact nature of any difficulty.

Students receiving additional support for reading need to be carefully assessed and the intervention programme selected for them should target their area of need, as recommended in the NCCA guidelines on assessment for learning.
http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Primary_School_Curriculum/Assessment/Assessment_Guidelines/

It has also been found that the regular assessment and on-going monitoring of student literacy achievement is associated with positive outcomes, (Solity 2000; Kennedy, 2010; Shanahan, 2005; Eurydice Network, 2011). Shinn et al. (1997) noted, '…*it has been noted repeatedly and persuasively that systematic evaluation of student achievement…significantly impacts student learning'* (p76). Additionally, the early identification of difficulties has been found to be important, (Scammacca et al., 2007; Singleton, 2009).

At the end of the block of intervention, the programme should be evaluated, through teacher reflection, curriculum-based assessment, student and parent feedback and importantly, records of student's progress (using pre and post intervention measures). This allows the teacher to measure response to intervention (RTI). This data should inform the individual teacher's next steps in teaching.

Click here to find out more about assessing literacy skills

4.9 Computer Assisted Learning

The NRP (2000) noted that computer assisted learning has considerable potential, particularly word processing approaches, as reading and writing activities can be integrated. The provision of speech to computer –presented text was also considered 'promising'. Slavin et al. (2008) suggested that computer based learning was not so effective, unless it was combined with other methods. Singleton (2009) reported that computers can be used to enhance motivation, but that the impact of computer assisted learning varies from study to study and small-scale, carefully targeted programmes, particularly those with speech-feedback, can have a significant impact. The message about the use of computers to assist literacy is that they need to be used judiciously, in focused and structured ways (see also Shanahan 2005). New developments in technology, including APPs for reading, need to be carefully evaluated.

Computer-based interventions may have potential, but need to be carefully targeted.

4.10 Motivating and Engaging Students

Guthrie, McRae and Lutz-Klauda (2007) noted that readers who are motivated view literacy as both useful and valuable and therefore read widely and frequently. The following approaches are recommended:

- Make literacy experience relevant to students' interests, everyday life and to current environmental events.
- Provide a positive learning environment that promotes student autonomy in learning.
- Allow choice. Empower students to make decisions.

- Build strategies such as goal setting (asking students to set their own targets), self-directed learning and collaborative learning.
- Give feedback that is motivational but not controlling. The best type of feedback is informational feedback that conveys realistic expectations, and links performance to effort. It is better to praise students for effort rather than to praise for ability.
- Give the students opportunities to engage in meaningful reading and writing activities, including reading their own and peers' work
- Offer students access to a wide range of high quality reading material.

There is some evidence that encouraging students to make positive declarations about their own literacy achievement can have a positive impact of reading success. (MacKay, 2007) This approach may have considerable potential and it has the advantage of being cost-free and easily implemented. MacKay (2006) found that those involved in making positive declarations benefitted in terms of achievement, but also in terms of positive attitudes to reading, motivation and confidence.

Positive declarations are free, take very little time and have the potential to make a significant difference to students' reading skills.

Click here to access guidance on

The use of positive declarations in the classroom

4.11 Summary of Section 4

On the basis of this evidence, we suggest that teachers might…

- Rethink your timetable (to maximise frequency of teaching and focus on short intensive periods of tuition)
- Choose key skill areas to develop
- Focus on those key skills for the duration of the intervention
- Offer daily teaching sessions (or even twice daily sessions)
- Assess students carefully
- Use pre and post measures to establish the current level of performance and to monitor progress
- Emphasise short-term, intensive intervention (no longer than one term)
- See students individually, in pairs or in groups of no more than 3
- Use evidence-based interventions- See Brooks, 2007
- Teach skills to the point of automaticity
- Use positive declarations daily
- Monitor and review your work
- Encourage students to select and enjoy books and develop a reading for pleasure habit
- Offer engaging, accessible and motivating reading material
- Link reading and writing in purposeful and meaningful contexts

Section 5 Effective Reading Instructors

5.1 Teacher Training and Supporting Teachers

The importance of teacher education (both initial teacher education and continuing professional development) is another consistent finding of the research (NRP, 2000; Kennedy, 2010; Eurydice Network, 2011). As Hall and Harding (2003) say, '*Many curriculum approaches and packages have been found both to work and to fail: what seems critical is the skills of the teacher*' (p1). The NRP (2000) reported that '*in-service professional development produced significantly higher student achievement*' (p17). Slavin et al. (2008) found that extensive professional development of teachers produced significant results. Not surprisingly, the first recommendation of the Rose Report (2009) was that there should be further investment in the training of specialist teachers to assist students with literacy difficulties.

There is research to indicate that the quality of the relationship between the student and the teacher, particularly in support settings, is a significant factor in programme outcomes (Barret and Varma, 1996). For example, an important feature of the successful Reading Recovery approach (Clay, 1993) is the development of the relationship between student and teacher.

Teachers are central to the delivery of effective teaching of reading. They need to be well-trained (initial teacher education and continuing professional development), well supported and to have positive relationships with the students.

5.2 Non-Teachers Delivering Programmes

There is evidence that non-teachers (classroom assistants, parent and community volunteers etc) who are well trained and have on-going support have been found to deliver effective reading programmes (NRP, 2000; McKay, 2006; Scammacca et al., 2007; Slavin et al., 2008; Lingard, 2005). In many jurisdictions, classroom assistants in particular have been found to be able to deliver reading interventions effectively. However, it is difficult to generalise from various studies as the qualifications, training, and supervision given to such classroom assistants may vary considerably.

Other members of the school community, such as volunteers can deliver highly effective reading programmes, IF they are well trained and supported, and are following an evidence- based intervention.

5.3 Tapping into the Power of Parents

Parent and teachers can help children separately or they can work together for the greater benefit of the child (Athey, 1990). The level of parent-teacher partnership can range from an information meeting about a literacy initiative (which could facilitate reinforcement of learning at home) to full parental involvement in initiatives.

Parents and teachers may have anxieties about working with each other. Teachers may be uncertain about what role parents can play. Some parents may have memories of school which make them uncomfortable relating to teachers. Most such problems are surmountable and are worth overcoming because of the influence that parents can have on the development of their young person's literacy skills (Hall and Harding, 2003; Sénéchal and LeFerve, 2002; Shaver and Walls, 1998; Persampieri, et al., 2006).

Parental involvement leads to positive outcomes for students especially so around the ages of 7 or 8 (Miedel and Reynolds, 1999). Shiel, Evers, Perkins and Cosgrove (2005) recommended that schools should make significant

efforts to help parents in developing their children's language and literacy skills.

Research shows that there seems to be a consensus that parents want to help their children at school but may not know how best to do this (Weinberger, 1996). One way to increase parent involvement in reading instruction is to train parents to tutor/help their children and implement effective reading interventions. In schools that are situated in areas of economic and social disadvantage, some parents may feel unable to become actively involved due to their own lack of reading confidence and/or reading competence.

The Eurydice Network Report (2011) into European practices noted, that providing advice and training for parents to read aloud to their children is not enough. They state, '*research evidence indicates that this is not enough, and that effective literacy programmes should also help parents learn how to teach their children specific literacy skills*.' (p15). The Australian Committee for the National Inquiry into the Teaching of Literacy (DEST, 2005) also recommended that programmes, guides and workshops be provided to parents/carers to support their children's literacy development.

Involving parents in their child's development of literacy and language skills has very positive outcomes for children. Parents may need support on how best to support their child with reading; following text, asking questions about the text, noticing letter sound patterns, rhyming words. Teachers/school may need to consider demonstrating to parents some of the above skills. See also www.helpmykidlearn.ie , a resource from the National Adult Literacy Agency.

5.4 Co-operative Learning and Peer Support

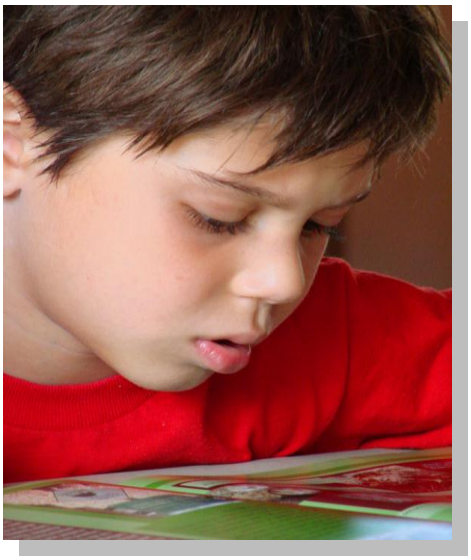
One, well-documented area of co-operative learning, is Paired Reading. In evaluating interventions that are effective, Brooks (2007) notes that Paired Reading has been comprehensively evaluated in many studies. It is both cost-effective and accessible. Vaughn et al. (2000) found that using a student with a reading difficulty as a cross age tutor is the most effective form of peer reading and peer reading is generally a highly effective intervention. In the Irish context, Nugent (2001) found this approach to be effective with children attending a special school for children with mild general learning difficulties. Therefore, teachers may find it useful to deploy peers, both in co-operative learning endeavours and in peer tutoring approaches.

Click here to download advice about organising a peer reading scheme
The Rough Guide to Reading Partners

For adolescent readers, co-operative learning may be particularly important. Slavin et al. (2008) reported, '*This review found that most of the programs with good evidence of effectiveness have co-operative learning at their core. These programs all rely on a form of cooperative learning in which students work in small groups to help one another master reading skills*…' (p31).

Teachers may wish to consider relatively low-cost interventions, such as peer reading programmes, as there is evidence that peers can be effective in raising reading standards, both through co-operative learning and through peer tuition.

Section 6 Five Evidence-Based Interventions



6.1 What Works in Ireland?

Evidence collected over four years of action research by NEPS, has indicated that there are a number of interventions that have proven to be effective in Irish schools. Five of these interventions are described in this chapter. However, it is important to appreciate that there is research evidence to support the use of other interventions, such as Reading Recovery and Literacy Catch-Up. The five interventions show-cased here, are those that were involved in the NEPS research.

This is where you will find out about 5 different approaches that have been found to work in Irish schools.

- **Acceleread/ Accelewrite (Clifford and Miles, 1994)**
- **Peer Reading (see Topping (2000) for a discussion)**
- **Toe by Toe (Cowling and Cowling, 1993)**
- **SNIP (a precision teaching package, Smart and Smart, undated)**
- **ARROW (ARROW, 2008)**

6.2 Acceleread / Accelewrite

Acceleread/ Accelewrite is a computer based programme, developed by Clifford and Miles (1994). It uses 'talking' word processors, and involves students reading text, memorising sentences, typing in the text and listening to the computer 'read back' what they have written. Students can self-correct errors. It is a highly structured programme and the recommended protocol is for individual tuition for 20 minutes, 5 days per week for 4 weeks.

Research reported by Brooks (2007) based on the Jersey Project, involved 61 students in 15 primary schools and 4 secondary schools. After 4 weeks of intervention, students made ratio gains of 8.3 in reading, with further increases reported over time. Brooks also reported on the Bristol study, which involved 60 children in 13 primary schools. After 8 weeks of intervention students made ratio gains of 2.3 in reading accuracy and 2.9 in comprehension.

Irish research, involving 13 pupils aged 11 to 13 years, who received between 11 and 17 sessions of Acceleread/ Accelewrite found that they made average gains of 12 months progress in reading and 7 months progress in comprehension (Tierney, 2005). Furthermore, a small-scale study by Devenney (2007) showed the potential for class teachers to deliver Acceleread/ Accelewrite, while continuing to teach the mainstream class group. Seven participants in this study, who completed a four week block of intervention, working on a computer within the classroom, under the supervision of the class teacher, made 9 months progress in reading, while a control group (those attending learning support) made no measurable progress.

Click here to see Acceleread/ Accelewrite in action in Holy Cross National School, Tramore, Co Waterford

6.3 Peer Reading

Peer reading is a well known approach. Broadly speaking, those who need help with reading are matched with a non-professional who assists by reading to the learner, reading alongside the learner and then listening to the learner read in a graduated system of support. There are various models or peer tutoring, including cross-age peer tutoring and class-based peer tutoring. Procedures for correcting errors and giving frequent praise are specified. Peer reading is reportedly cost-effective in terms of teacher time, but needs on-going organisation, including the training of tutors, monitoring of progress, maintenance of the programme (for example monitoring attendance and trouble-shooting incompatible pairings). Logistical issues of time, space and suitable reading materials also need consideration.

Peer reading is one of the most comprehensively researched interventions available. Brooks (2007) reports on studies involving 2,372 students in 155 projects in 71 schools. Ratio gains of 3.3 in reading and 4.3 in comprehension were reported. As Topping (2000) noted, the general picture in published studies is that peer readers progress about 4.2 times 'normal' rates in reading accuracy, during the initial period of commitment.

Research in Ireland found that this approach was effective with students with a mild general learning disability. In this study of cross-aged peer tutoring, data was collected for 30 'helpers' and 18 'learners', attending a special school. Those involved in peer tutoring made twice as much progress as control groups (Nugent, 2001). Nugent and Devenny (2008) reported on a peer reading scheme in a secondary school in Ireland. It was found that helpers make the most significant progress, making twice as much progress in reading over the course of the intervention, than did a comparison group.

Click here to see cross-age peer reading in action in

Mount Sion Boys' Secondary School and

Mount Sion Boys' National School, Waterford City

6.4 Toe by Toe

Toe by Toe is a highly structured programme that teaches phonic skills. The reading of non-words is a feature of this programme, and there is considerable emphasis on recording progress. It can be used for students from the age of 6 years, although we recommend it for older students, from 9 years upwards. It has also been used effectively in the prison service. It is an individualised approach and the recommended protocol is for 20 minutes of instruction, daily.

Published research includes a study of 24 secondary aged pupils. They were matched pairs in the control group (normal learning support) and the experimental group (Toe by Toe, taught individually, for 20 minutes per day, five days per week, for an average of 3 months).

'*The results were definitive. The experimental group made average gains of three and a half years. The control group made average gains of five months.'* (McKay and Cowling, 2004).

Furthermore, MacKay (2006) used the Toe by Toe intervention with 91 children who struggled with reading in 32 Scottish primary schools (part of the West Dunbartonshire Reading Initiative). After 6-7 months of intervention, the average participant made gains of 14 months in reading (representing a ratio gain of 2.3). Finally, Brooks (2007) reported on an unpublished study by Keith Taylor, which found that 21 participants in a primary school made gains of almost 4 years in reading, over an 18 month period of intervention (ratio gains are reported to be 2.7).

Click here to see Toe by Toe in action in

Holy Cross National School, Tramore, Co Waterford

6.5 SNIP

SNIP is perhaps the least well-known of the intervention methods described here. It is grounded in the theory of precision teaching and instructional psychology and was developed by Carol and Phil Smart. It is suitable for students in the upper part of primary school or early secondary school and aims to develop their sight vocabulary, particularly of essential curriculum words. Students are taught lists of sight words, which they practice daily, for five minutes, until they attain fluency. SNIP is freely available to download. It is recommended that students have a reading age of about 10 years, before embarking on the SNIP programme, although we have seen successful outcomes with students with lower reading ages at the outset.

On their website, the authors claimed, '*Using this pack we have achieved measurable gains of three years in an academic year with some of our pupils*' (Smart and Smart, www.snip-newlsetter.co.uk). Although this claim does not constitute reliable evidence, nonetheless the efficacy of precision teaching methods is well-documented (Binder and Watkins, 1990).

Click here to see SNIP (precision teaching) in action in Presentation Secondary School, Waterford City

For those wishing to use a precision teaching method, the resource pack contains various resources, including guidance on how to teach sight vocabulary.

Click here to find out more about precision teaching approaches and to access resources.

6.6 ARROW

ARROW stands for Aural- Read- Respond- Oral- Write. It is a programme developed by Colin Lane (2008). It works on the principle that hearing one's own voice is a psychological key to much language comprehension. The system involves students recording and playing back their own voices reading, using laptop computers and headphones and a structured system of examples and exercises. The program displays a piece of text at the appropriate level (anything from a single letter to a short paragraph). The student hears it spoken, then repeats it aloud, and records it, then plays it back. At the end of the process, the student writes down the piece of text. The programme has a range of protocols, typically 30 minutes per day, for a total of 10 hours tuition. One adult is able to supervise a number of students (typically 5), as long as each student has access to a computer.

Brooks (2007) evaluated a large range of literacy interventions and, in relation to ARROW he noted, '*The ratio gains show that this amount of progress…was remarkable, if not spectacular*' (p133). In the study cited by Brooks, 91 students made average gains of 7 months in reading and 6 months in spelling after just 1.5 weeks of intervention.

Lane (2008) also reported on further data involving 445 students in 20 schools. Typically, after 2-3 hours of ARROW training, students made average gains of 9.5 months in reading age. Those who undertook longer programmes (8 to 10 hours of ARROW tuition) made gains of 14 months in reading age.

Click here to see ARROW in action in Coláiste Chathail Naofa, Dungarvan

Click here to see ARROW in action in St John's Special School, Dungarvan, Co Waterford

6.7 Selecting an Intervention

The five interventions reviewed have been shown to be effective, but there are many other evidence-based interventions available, for example, Phono-Graphix, Reading Recovery and Corrective Reading, Reciprocal Teaching and Inference Training (for comprehension skills). Brooks (2007) provides a most comprehensive review as do the websites www.bestevidence.org and www.fcrr.org. At the post-primary level, the NBSS have also carried out research in Irish schools and this can be found in their publication, Literacy and Learning Programmes and Resources www.nbss.ie Teachers need to select interventions, taking account of a range of factors. The following structure may be helpful in guiding decision making:

- **What interventions are readily available to me?**
- **What evidence is available?**
- **Which of these interventions is suited to the student's age group?**
- **Does the intervention appear to target the student's greatest level of need?**
- **Are there particular reasons why a student might respond better to one approach rather than another?**
- **Can the learning support timetable offer the type of structure required by this intervention?**

Some new approaches can be implemented at very low cost (SNIP), without any time delay, while other approaches may require longer-term investment and training (ARROW). We suggest that teachers aim to build a repertoire of effective interventions, so that they can be responsive to individual needs. This is not the same as adopting an eclectic approach, where multiple elements of different programmes are combined, which has been found to be less effective. Rather, the teacher systematically delivers an evidence-based intervention and after review, either continues with this programme or offers

an alternative evidence-based approach for a further block of time. It is certainly the case that students (and teachers) may tire of particular approaches after an intensive block of intervention, and may be more responsive to novel approach after a period of time.

Click here to get more information about possible Interventions, including contact details and free downloads

Section 7 Data from Action Research in Waterford

7.1 The Background to the Research

This section summarises findings from 4 years of action research projects, based on the Waterford Reading Projects. Similar projects were carried out in Navan and Galway, with equal success, but the data presented here is based on the Waterford studies.

In the Waterford Reading Projects, the NEPS psychology team presented up-to-date research evidence about named intervention programmes or approaches, so that teachers had an evidence-based menu from which they could select a programme. Ultimately five interventions were chosen by the vast majority (87%) of teacher participants:

- **Acceleread / Accelewrite (Clifford and Miles, 1994)**
- **Peer Reading (see Topping (2000) for a discussion)**
- **Toe by Toe (Cowling and Cowling, 1993)**
- **SNIP - a precision teaching package, (see Binder and Watkins (1990) and Smart and Smart, (n.d.)**
- **ARROW (ARROW, 2008).**

(See section 6 for details of each intervention)

Other evidence-based interventions were either not selected (often due to a lack of available training) or selected by very small numbers (and therefore did not provide adequate data for comparison purposes). Each project involved learning support/ resource teachers delivering an evidence-based intervention over a specified time frame (3 months) and collecting pre and post-intervention data.

7.2 Who took part in the projects?

Over the three years, 46 teachers participated in the action research, and data was collected for 221 students. Of these, valid pre and post-intervention data was collected for 200 students in primary and post-primary schools, who

followed the five most popular interventions. Students were in the age range 5 to 17 years. The mean age of participants at the start of intervention was 12 years. There were 126 boys and 63 girls participating, with 11 participants for whom gender was unspecified. Students had average word reading scores at approximately the 13th percentile at pre-intervention (standard score of 83).

Table 1: Number of Participants (students) in each Intervention

Intervention	Students
Acceleread/ Accelewrite	43
Peer reading	54
Toe by toe	33
SNIP	21
ARROW	49
Total	**200**

Data was collected for 200 students in the age range 5 to 17 years. These students followed one of five intervention programmes for a period of 3 months (average 12 weeks teaching), delivered by learning support/ resource teachers.

7.3 How much progress did they make?

As noted in Chapter 3, standard scores represent the most statistically correct way of measuring progress, and therefore the data collected during the reading projects was in the form of standard scores. These in turn have been converted to ratio gains and age equivalents, in order to further illustrate the rates of progress made by participants. It was found that over the course of a 3 month intervention, the average participant made gains of 12 months in both word reading and in reading comprehension (See Table 2). This represents a ratio gain of 4.

Table 2: Progress over 3 months of instruction, pre-and post intervention age equivalent test results, all participants

Test	N	Pre-intervention	Post-intervention
Word Reading	200	8 years, 3 months	9 years, 3 months
Comprehension	188	8 years, 9 months	9 years, 9 months

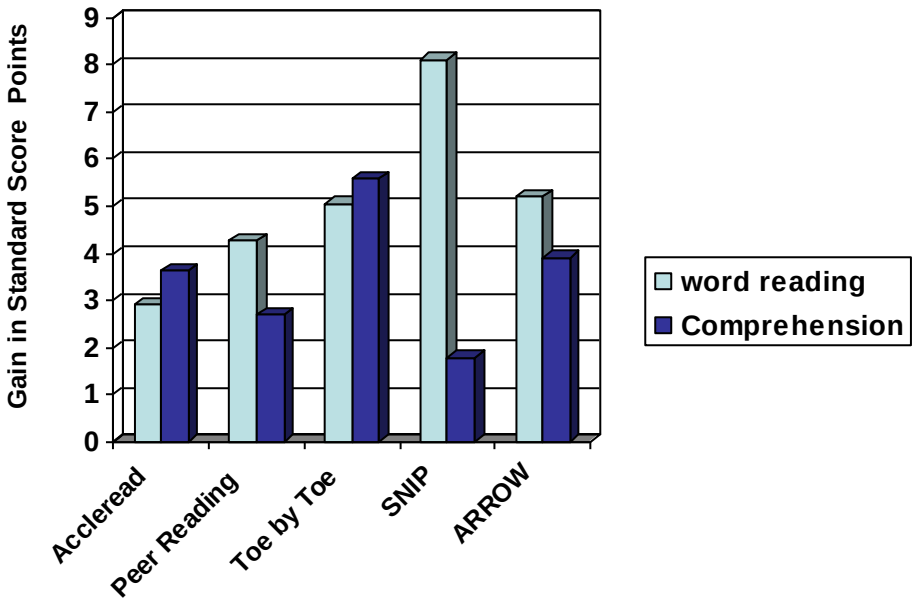
It should be noted that it was not possible to gather longitudinal data, so it is unclear whether this progress was sustained over time. Qualitative data did indicate that students had developed a more positive attitude to reading.

The average participant made a year's progress in word reading and a year's progress in reading comprehension over the period of the intervention (12 weeks of tuition).

7.4 Were some interventions better than others?

Teachers will want to know if any of the five interventions was significantly better than the others. One way of considering this is to look at standard score gains for each intervention graphically.

Figure 1: Comparison of interventions, based on standard score gains in word reading and comprehension.



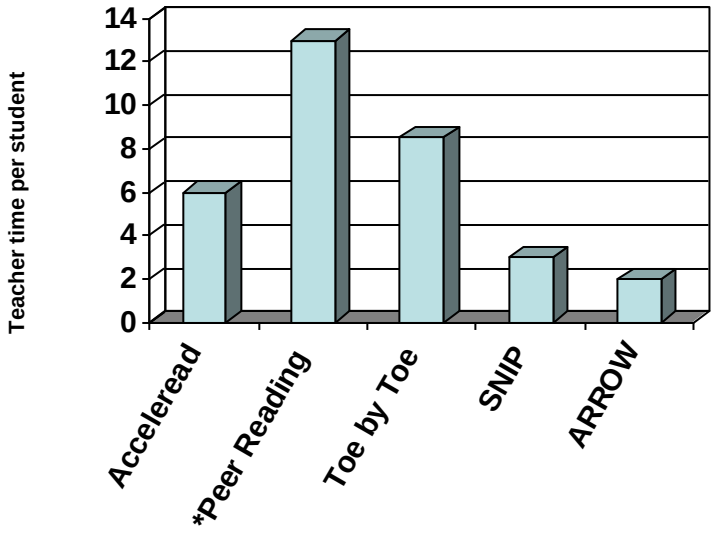
What the above data is telling us is complex: It is not the case that any one intervention can be declared the most effective. It appears that SNIP can be a highly effective intervention in the area of word reading, but is less effective in the area of comprehension. This is perhaps not surprising, as this intervention is solely based on word reading tasks. Toe by Toe was impressive, in that it appeared to address both word reading and reading comprehension equally effectively.

No one intervention was clearly better than another. SNIP was best for teaching word reading, while Toe by Toe gave the best overall results, BUT, all of these interventions provided significant gains, which met Brook's (2007) standard of 'twice the usual rate of progress'.

7.5 Teaching Time and Learning Time

An important consideration in calculating the efficacy of any intervention programme is to look at the amount of time given by students to learning and the amount of teacher time required to deliver the programme. The teacher time spent per student is shown in Figure 2. The calculation is based on hours of teaching, divided by the number of students in the group.

Figure 2: Graph comparing the amount of teacher time spent per student, for each intervention



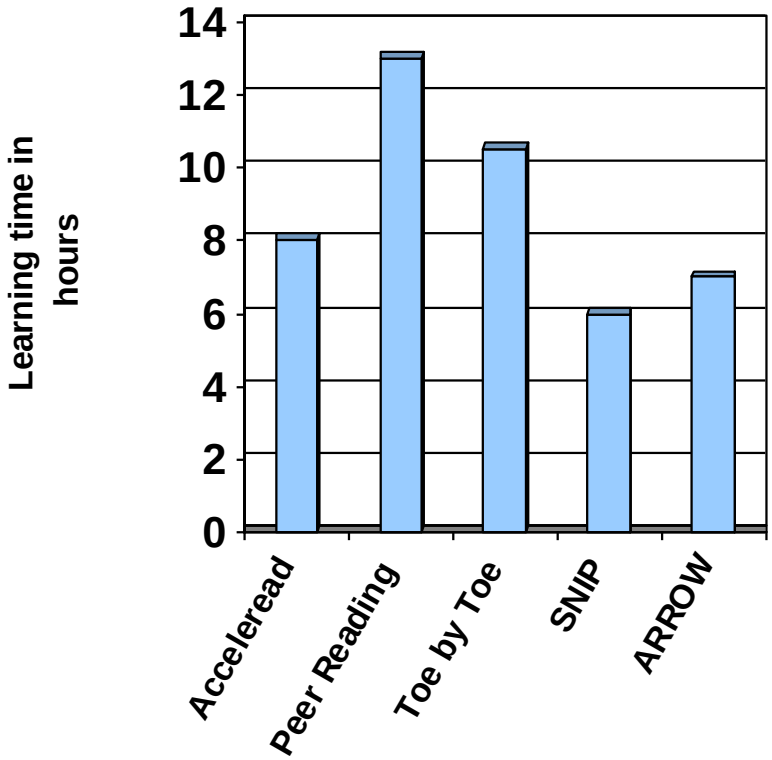
**Note, teacher time for Paired Reading could not be calculated*

We can see that ARROW and SNIP give good value in terms of teacher time. The average amount of teacher time used, per student, was 2 hours for ARROW and 3 hours for SNIP. One of the particular advantages of the ARROW programme is that it can be effectively delivered to groups- typically 5 students at a time. The SNIP programme was delivered in both a larger group setting (7 students) and individually, for very short periods of time (10 minutes) making this a very time efficient intervention for both students and teachers.

SNIP and ARROW offer particularly good value in terms of the efficient use of teacher time. Peer reading is also known to be cost-effective in terms of teacher time.

Let us now look at the time students spent learning. As Figure 3 shows, students in Acceleread/ Accelewrite, SNIP and ARROW spent broadly comparable amounts of time learning (between 6 and 8 hours), although those participating in peer reading spent significantly longer (13 hours).

Figure 3: Graph comparing the amount of learning time spent, per student, for each intervention



7.6 Want to know more about these interventions?

Section 6 includes a brief summary of each intervention, with video clips of the intervention in action. Information about the evidence basis is also presented. Much of the data reported is drawn from Brooks, (2007) *What Works for Pupils with Literacy Difficulties.* This is supplemented with more recent (and sometimes as yet unpublished) research in Britain and Ireland.

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Appendix 1 Key Studies Cited in Research

Author Date of Publication	Study commissioned by/ published by	Scope/ Aim of Study	Sources of evidence & Criteria for inclusion
Snowling & Hulme (2011)	Review was prepared with support of Wellcome Programme Grant	Reviews evidence concerning the nature, causes of, and treatments for children's reading difficulties. Sound theory should inform interventions, which in turn should be evaluated by randomised controlled trials.	Focuses on randomised controlled trials, summarises research from 10 studies between 1992-2011
Kennedy (2010)	Dr Kennedy is a lecturer in reading at St Patrick's College. This study formed her doctoral research	Report on a two year intervention designed to improve literacy levels in a disadvantaged urban primary school.	This study is reports on outcomes for 56 students, whose teachers received sustained, intensive, on-site professional development in the area of literacy.
Rose (2009) (supported by an expert advisory group of 9)	Independent report, commissioned by Secretary of State for Children, Schools and Families	'In light of the evidence, to make recommendations on the identification and teaching of children with dyslexia...' (p8)	Call for evidence, resulting in 863 submissions Review of research literature School visits Wide consultation Information from: -Singleton (2009) -Evaluation of the Every Child a Reader -Evaluation of No to Failure Project
Singleton (2009)	Review commissioned by the 'No to Failure' project and funded by the Department for Children, Schools and Families	'Summaries published research evidence of the impact of specialist teaching on progress and outcomes for students aged 5 to 18 with dyslexia/ specific learning difficulties' (p6).	Research that is consistent with existing scientific evidence, theory and practice and with is supported by evidence from well-constructed quasi-experimental studies. Studies must include outcome measures reported as standard scores, ratio effects of effects sizes (as per Brooks 2007, see below)
Slavin, Cheung, Groff, Lake (2008)	Authors affiliated to John Hopkins University, Hong Kong Institute of Education, University of Pennsylvania	A best-evidence synthesis, evaluating reading programs for students in grades 7-12.	Studies must be reported in English & make use of control groups with random assignment or rigorous matching and control of pre-test differences Quantitative measures of reading performance must be reported using standardised measures Interventions must be of at least 12 weeks duration Interventions must involve at least two teachers and 15 students in each treatment group

Author Date of Publication	Study commissioned by/ published by	Scope/ Aim of Study	Sources of evidence & Criteria for inclusion
Scammacca Vaughn, Roberts, Wanzek, Torgesen (2007)	Publication created for Centre on Instruction, RMC Research Corporation, with Florida Centre for Reading research, Horizon research Inc, RG Research Group, Texas Institute for Measurement, Evaluation and Statistics, Vaughn Gross Centre for Reading and Language Arts	'The report summarises relevant high-quality research studies and synthesises their findings to determine the relative effectiveness of interventions for struggling early readers'. (p1)	Studies published between 1995-2005 Must address needs of students with 'learning disability' or 'at risk' of reading failure. Intervention must be provided over 100 sessions or more Published in peer reviewed journals in English Covering K to 3rd grade Involving school-based interventions Reading outcome measurements must allow for effect sizes to be calculated Including treatment and comparison groups
Brooks (2007)	National Foundation for Educational Research Published by Department for Children, Schools and Families Author affiliated to University of Sheffield	Explores literacy schemes which have been used to boost reading 48 schemes are evaluated	Restricted to schemes in use in the UK Studies must include standardised data which allows for the calculation of either effect sizes or ratio gains
MacKay (2007)	West Dunbartonshire Council	A ten year study using quasi-experimental design which aimed to eradicate illiteracy from the West Dunbartonshire local authority Involved over 6,000 students in the age range 5 to 17 each year.	Data collected pre and post intervention standard scores and incorporated comparison groups, with pre-intervention cohorts acting as controls.
Shanahan (2005)	University of Illinois, Chicago, Learning Point Associates, funded by the US Department of Education	Outlines characteristics of programmes developed for adolescents who are struggling with literacy Provides review guide to help schools make informed decisions about programmes	Data collected about programmes that target middle and high school grades (4-12), for those reading significantly below grade level. Literacy programme must aim to increase achievement at a rate faster than average. Can be a core or supplemental programme. Can be whole class, group or individual. Programmes must focus on at least one aspect of literacy instruction.

Author Date of Publication	Study commissioned by/ published by	Scope/ Aim of Study	Sources of evidence & Criteria for inclusion
Hall & Harding (2003)	EPPI-Centre, Social Science Research Unit, Institute of Education Supported by the Teacher Training Agency	A meta-analysis that aimed to assemble, examine, appraise and synthesise the evidence on the nature of effective literacy teaching of students in the 4 to 14 age range of mainstream schooling	Looked at the professional characteristics, beliefs and classroom approaches of effective teachers of literacy. A total of 12 studies were analysed, mostly published in North America.
National Reading Panel (2000) 14 individuals, including 'leading scientists in reading research'	Convened by National Institute of Child Health and Human Development, in consultation with Secretary of Education, at the request of US Congress	'A national panel to assess the status of research-based knowledge including the effectiveness of various approaches to teaching children to read' (p1) 100,000 studies were screened for inclusion Data was supplemented by regional public hearings	Research must use experimental or quasi experimental design Published since 1966 in English in a peer reviewed journal Using standardised measures of reading ability as outcome measure Students from pre-school to grade 12 Control group used or multiple base-line data provided Included material that was amenable to meta-analysis and some that was subject to subjective qualitative analysis
Vaughn, Gersten, Chard (2000)	Authors are affiliated to the University of Texas and the Eugene Research Institute	A meta-analysis which summarises the critical findings of research syntheses funded by the Office of Special Education Programs and the National Centre for Learning Disabilities 4 key studies, supplemented by 3 others which inform conclusions	Based on the work of Swanson who reviewed all the intervention research published in the area of learning disability from 1963 to 1998. Subsequent meta-analysis and research synthesis were carried out with support from US Department of Education, Office of Special Education Programs and the National Centre for Learning Disabilities
Solity (2000) & Solity, Deavers, Kerfoot, Crane and Cannon (2000)	Solity affiliated to the University of Warwick and other authors with Essex County Council	These two papers report on Early Reading Research, a six year project 'investigating the most effective approaches to improving reading standards, ensuring that every child can reach age and skill appropriate targets in reading: and, preventing the occurrence of reading difficulties' (p109)	These were experimental research studies, involving 370 children in early years education in Essex. Measures used were standardised and criterion referenced tests of reading, and component skills of reading, such as knowledge of letter sounds, ability to segment etc.

Author Date of Publication	Study commissioned by/ published by	Scope/ Aim of Study	Sources of evidence & Criteria for inclusion
Swanson & Hoskyn (1998)	Authors affiliated with University of California	A meta-analysis of experimental studies that looked at the efficacy of interventions for children and adults with literacy difficulties Involved the systematic search of databases for work published between 1963-1997 Over 2,900 abstracts considered, but ultimately only 180 studies met criteria	Participants must have average IQ (85 or above) Participants pre-intervention reading ability should be at or below the 25th percentile Studies must use experimental design Have a control condition Provide enough information so that effect size can be calculated Involve interventions that are additional to normal classroom teaching Be published in English

Acknowledgements

With thanks to students, staff and community of the following schools:

Coláiste Chathail Naofa, Dungarvan

Holy Cross National School, Tramore

Mount Sion National School, Waterford

Mount Sion Secondary School, Waterford

Presentation Secondary School, Waterford

St John's Special School, Dungarvan

This Good Practice Guide was complied by the NEPS Literacy Working Party

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October 2012