

# **Reading and Writing Success for all Students by the Age of 6 Is this really possible?**

## **A longitudinal study of one school's successful journey towards this goal**

### **Introduction**

This article presents the results achieved by one teacher who changed the way she teaches her new entrant students to understand how written English works. Jenny Wilson is a teacher at Roxburgh Area School, a Decile 4 school in Central Otago. Jenny's students were already achieving close to the goals of the draft Literacy Learning Progressions document for reading book level (Level 12 by age 6, Ministry of Education, 2008), see Table 2. However, Jenny felt unhappy that not all her students were achieving at the same level. In 2005 she decided to change the instructional approach she used for teaching students to understand how written English works. This single change has resulted in statistically significant shifts in many of the outcomes her students achieved in the 6 Year Observational Survey assessments undertaken at the age of six (Clay, 1993).

A variety of factors influence students' literacy success in their first year at school and classroom teachers are unable to influence all of them. They do however have control over the instructional strategies used to teach literacy skills and these are their 'tools of effective practice' (*Effective Literacy Practice in Years 1 to 4*, p.13). Jenny changed one instructional strategy at the start of 2005. She began to teach children to understand the alphabetic principle (a foundation concept about print) by working from sounds-to-print instead of print-to-sounds, using *Switch on to Spelling* (Allcock, 2003) as a teaching tool. She was delighted with her students' progress and at the end of 2008, data from her School Entry testing and 6 year Observational Surveys were collected and analysed for an eight year period. The results that follow suggest that changing an instructional strategy can indeed influence student outcomes. The credit for these results belongs to the teacher – to the way in which she used her multiple 'tools of effective practice' on a daily basis in her classroom.

### **Results and Discussion**

The data analysis was carried out by Dr Alison Arrow of Massey University. It compares two cohorts - the retrospective control group (the new entrant students between 2001 and 2004) and the intervention group (the new entrant students between 2005 and 2008 who received instruction from *Switch on to Spelling* during their first year of school). There were a total of 123 children in the sample, but only the 103 children for whom there was complete data are included in the analysis (those with school entry and 6 year Observational Survey results). There are 53 children in the control group and 50 children in the intervention group. The sample encompasses eight years of data collection (four years prior to and four years after the change in instructional strategy) for students in the same year level, in the same school with a single teacher over that time.

**Table 1: Concepts about Print and Oral Language at School Entry**

Measure	Control Group	Intervention Group	<i>p</i> =
<b>CAP median (standard deviation)</b>	10.36 (3.61)	11.49 (4.14)	.14
<b>Oral Language median (standard deviation)</b>	11.77 (3.13)	12.86 (3.46)	.10

As shown in Table 1, there were no significant differences between the two groups on school entry CAP scores,  $t(102) = 1.49$ ,

$p = .14$ , or on Oral Language scores  $t(101) = 1.67$ ,  $p = .10$ .

Although the slightly higher school entry results for the intervention group were not statistically significant, the comparisons between the control group and the intervention group used univariate ANOVA to control for any possible effects of the school entry CAP scores and school entry Oral Language scores.

**TABLE 2: 6 –year Observational Survey Results**

Measure	Control Group	Intervention Group	<i>F</i> (1, 99)	<i>p</i>
<b>Concepts about print (Max = 24)</b>	18.77 (3.14)	21.66 (2.85)	21.35	<.01
<b>Word reading score (Max = 15)</b>	11.77 (3.89)	13.48 (2.59)	5.28	<.05
<b>Letter ID score (Max = 54)</b>	52.02 (3.55)	53.46 (1.28)	5.41	<.05
<b>Dictation score (Max = 37)</b>	32.38 (6.46)	35.78 (2.85)	9.18	<.01
<b>Writing Vocabulary</b>	46.43 (23.50)	67.62 (26.47)	16.12	<.01
<b>Burt Word Reading (Max = 110)</b>	23.83 (15.26)	29.04 (14.80)	1.27	=.26
<b>Reading Book Level</b>	11.81 (5.97)	14.92 (6.62)	3.98	=.05

This analysis controlled for school entry CAP scores and school entry oral language scores. This is important as children with good school entry data will do well regardless of whether they get the intervention or not. So it controls for some kind of boot-strapping effect of existing pre-school knowledge. Of the seven Observational Survey measures, five showed evidence of a positive effect of the change in teacher practice.

The first one is Concepts about Print. Even when controlling for previous scores on this measure there is an effect of the intervention. Thus the intervention is adding to the pre-existing knowledge of children to increase their CAP scores. More children (14 children) in the intervention cohort reached ceiling (they achieved the maximum score of 24) in this measure than the control group (4 children). Thus, it is likely that ceiling effects are masking the full effects of the intervention.

The next significant effect is for the Ready-to-read word measure. As with the CAP measure, ceiling effects may be masking the true effect of the intervention. This can be seen in Table 2, where the mean is close to the maximum score of 15 words read correctly and the variance, or standard deviation is less for the intervention group than for the control group. Additionally, ten children in the control group read five or less words correctly, compared to only one child in the intervention group. However it must be noted that the school entry CAP had a stronger relationship with this word reading measure,  $F(1,101) = 42.95, p < .01$ .

Letter identification and dictation were also both significant, in that once you control for school entry CAP and oral language there is a significant effect of the intervention. Again, there are clear ceiling effects for the Intervention cohort in particular, with close to ceiling means and standard deviations (see Table 2).

The last measure that is significant is writing vocabulary. This is an important result in that there are no ceiling effects because there is no maximum score, thus showing the effects of the intervention more clearly than the most of other post-intervention measures.

Reading Book Level was just reaching significance ( $p = .05$ ), however it must be remembered that reading book level is subjective, even when it is just one teacher providing the reading book levels. The draft Literacy Learning Progressions document (Ministry of Education, 2008) suggests that the average six-year-old should be reading at Book Level 12 or above. In the control group, 58.5% of students were reading at or above this level compared with 72% of students in the intervention group who were reading at or above this reading level.

Although there was no significant difference between groups on the Burt Word Reading test, there is a trend towards higher reading scores in the intervention group. This difference may increase over time. All children were tested within a month of their 6<sup>th</sup> birthday and the Burt Word Reading scores for both groups are higher than average. The mean score for the control group equates to a reading age of approximately 6 years 3 months, in comparison to 6 years 9 months for the intervention group.

## Summary

The intervention seems to have an effect on CAP scores, dictation, early word reading (the Ready to Read test), letter identification and writing vocabulary. The true effects of the intervention cannot be clearly seen using 6 Year Observational Survey results alone because there are ceiling effects on several measures that are more apparent for the intervention group in particular. The two measures not limited by ceiling effects are the written vocabulary scores, and the Burt reading test raw scores. Looking at these two results together indicates that the intervention has an influence on spelling ability in particular.

## The Intervention - discussion

The basis of this intervention was to teach students to understand how words work. When children start school they know a lot about what words sound like and they understand what words mean when they hear them. Most children know very little about what words look like at this age. By teaching from what words sound like and mean, to what words look like and mean, instruction moves from the known to the unknown. The intervention used in this study worked from words (knowledge of spoken words) to phonemes (knowledge of sounds inside words) to graphemes (knowledge of letters and letter patterns that represent sounds) to morphemes (knowledge of parts of words that carry meaning) and it also introduced some simple spelling conventions (why certain letters are used in particular words). It taught students to understand the alphabetic principle – that the words we say are made up of a string of sounds and that these sounds can be written down using letters of the alphabet in various ways.

Knowledge of the alphabetic principle is necessary for developing a knowledge of phonics and an understanding of how written words work and it should be taught explicitly (Bryne, 1988; Ehri, 2003). Phonemic awareness skills are critical to literacy development because of their relevance to understanding the alphabetic principle and they also should be taught explicitly (Report of the National Reading Panel, 2000).

A key focus of instruction was to introduce a new sound every day. Students brainstormed words they knew that contained the focus sound and were then taught one way to write the sound. This daily practice listening for sounds in words, breaking words into sounds and learning to write sounds down resulted in remarkable writing skills in the intervention group. By the end of one term at school students had been exposed to and could write most of the sounds of English. This meant that they could then represent the sounds they could hear in words when they were writing. Instead of just introducing the 26 letters of the alphabet and the sounds associated with them, instruction focused on introducing all sounds of English quickly (including sounds not associated with a single alphabet letter - 'or', 'oy', 'er' etc) and learning at least one way of writing each sound. The following writing samples

illustrate the skills the students rapidly acquired in just a few months at school. These children were not writers when they came to school but all children in the intervention group were able to write independently before their 6<sup>th</sup> birthday, no matter what their school entry results were like.



my hair cut  
 In the Weekend I  
 had a hair cut  
 It went big to small  
 and after I had a hair  
 cut I looked in the  
 mirror I had short  
 hair. When I stroked  
 my hand back my hair  
 felt fuzzy and when  
 I stroked my hand  
 forwards it felt flat  
 I think short hair  
 will last till Christmas.  
 I like it very much.

I have a cat  
 I love my cat  
 he is ginger and white  
 He is naughty.  
 He caught a bird  
 and he put it in the  
 wash house. He  
 ate the whole of  
 the bird. How horrible

#### My Hair Cut

In the weekend I had a haircut. It went big to small and after I had a haircut, I looked in the mirror. I had short hair. When I stroked my hand back my hair felt fuzzy and when I stroked my hand forwards it felt flat. I think short hair will last till Christmas. I like it very much.

**Boy 5 years 11 months**

I have a cat. I love my cat. He is ginger and white. He is naughty. He caught a bird and he put it in the wash house. He ate the whole of the bird. How horrible.

**Boy 5 years 5 months**



I have a Balloon. It  
 is purple. I blew  
 it up and up and  
 up and up and  
 I let it go. Zoom it went  
 so first it went  
 around and around  
 and around. It went PLOP on the  
 floor. Everybody  
 even Miss Wilson and  
 Oliver laughed. Katie  
 laughed. The end

I have a balloon. It is purple. I blew it up and up and I let it go. Zoom, it went so fast it went around and around and around. It went plop on the floor. Everybody even Miss Wilson and Oliver laughed. Katie laughed. The End.

**Boy 5 years 7 months**



my Kittens  
 Scratch  
 Kittens  
 my Kittens Scratch  
 I don't like the  
 Kittens scratching me.  
 I say "no no no  
 no" at the Kittens.  
 my hands are covered  
 in scratches. I hope  
 rascals they will be  
 good

**My Kittens Scratch**

My kittens scratch. I don't like the kittens scratching me. I say "no, no, no, no," at the kittens. My hands are covered in scratches. Rascals. I hope that they will be good.

**Girl 5 years 7 months**

Phonics instruction was an integral part of the intervention and this was taught in the context of shared writing and guided reading. Students were taught to segment and write the sounds in words when spelling and to recognize letters and spelling patterns, turn them into sounds and blend sounds together to pronounce words when reading. The intervention went beyond just teaching phonemic awareness skills and phonics knowledge however. It also incorporated teaching students about the morphemic structure of words and it introduced them to some simple and reliable spelling conventions. It may seem surprising to be teaching beginning readers and spellers about the structure of words and spelling conventions. However, if this is taught in a relevant way, young learners quickly develop an understanding that words have structure and meaning and that spelling patterns have a purpose. Treiman and Cassar (1996) found that even children with a reading age as low as first grade level had

some ability to use morphological information in their spelling attempts. They state, 'Although children's ability to use morphological and orthographic information may be limited at first, the fact that they possess such abilities at all is impressive'(p.69).

The writing samples show that beginning spellers can learn to use morphemes like the **ed** suffix for past tense for example, when it is taught explicitly and early. Students in the intervention group were also taught some simple spelling conventions in their first year at school.

*For example:* When do we use an **a** to spell the short 'u' sound (as in *a, about, around*)?

If the short 'u' sound is a syllable on its own (one clap) we use **a** to write it (*a/gain, a/bout, par/a/chute*).

We sometimes use an **a** for this sound on the end of words too (*camera, banana*) – lots of countries end with a short 'u' sound, written with an **a** (*Australia, India, America, Samoa, China*). But if the short 'u' is anywhere else in a word, we don't use an **a**!

### The butfly

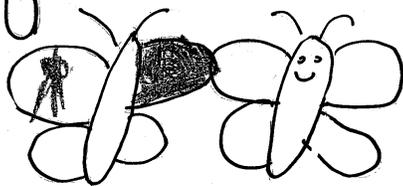
along time ago we had a egg what changed into a tiey catapull into a a.a.a.a... enormous cat a p [ ] [ ] Then it changed into a crisalis and slept for a very lan time. Then it changed in to a monarch butyfly and land id on us all. He was a friend. He is awesome we love him too you know. The End.

### The Butterfly

A long time ago we had a egg what changed into a tiny caterpillar, into a a a a a enormous caterpillar! Then it changed into a chrysalis and slept for a very long time. Then it changed into a monarch butterfly and landed on us all. He was a friend. He is awesome. We love him too you know. The End.

**Boy 5 years 9 months**

BUTTU  
FLI



WUNS THER WAS A CRISLIS DAY CRAK!!! WENT THE CRISUS. UOOT CAME A BUTTU FLI =I wish I cold fli now= she says she DRID HER WINGS AND THEN AWAY she FLIS uoot of the CLUSS ROOM. she FLIS to A FLOWWER BY SAID HE CHILDEN

### Butterfly

Once there was a chrysalis. One day, crack !!! went the chrysalis. Out came a butterfly. "I wish I could fly now," she says. She dried her wings and then away she flies out of the classroom. She flies to a flower. Bye said the children.

**Girl 5 years 2 months**



I Love The catpla  
In a w clasrom  
The batfliw landd  
on ow fegar. It tikos  
as wen the batflaw  
sits on ys We lafd  
and lafd and lafd. I had  
It in miw hand  
It ticked me. It  
is a monak batfliw  
I hope we dit dsdive  
miss kopdns clas  
The batfla is blak  
and ORIJ Em had put  
It on her eer  
misis wosin tok  
a fotow I Love  
batflays Tay  
make me smiyol los

I love the caterpillar in our classroom. The butterfly landed on our finger. It tickles us when the butterfly sits on us. We laughed and laughed and laughed. I had it in my hand. It tickled me. It is a monarch butterfly. I hope we didn't disturb Miss Copelands class. The butterfly is black and orange. Em had put it on her ear. Miss Wilson took a photo. I love butterflies. They make me smile lots.

**Girl 5 years 3 months**

This child could already write in upper case letters when she started school.

This morning millyns  
of worms came  
out of the ground  
Some of them  
were holding hands  
and dancing and some  
were slithering around my  
feet. Some worms stretch  
ed out and in again.  
they were slippy slithy  
sqmishy sqormy Big fat  
Perpol Worms.

This morning millions of worms came out of the ground. Some of them were holding hands and dancing and some were slithering around my feet. Some worms stretched out and in again. They were slippery, slithery, squishy, squirmy, big fat purple worms.

**Girl 5 years 9 months**

The focus of this intervention was to provide beginning readers and spellers with explicit instruction about how written English works. Working from knowledge of oral vocabulary to knowledge of the sounds inside words, to knowledge of how to write sounds in words and to thinking about why words look the way they do, provided the students in the intervention group with knowledge and strategies that have shown significant improvements in their early literacy skills when compared with a similar cohort who did not have this type of instruction.

A special thank you to Jenny Wilson, whose teaching resulted in such successful outcomes for her students and to the children of Roxburgh Area School who wrote the stories in this article.

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## **Bibliography**

Allcock, J.M. (2003). *Switch on to Spelling*. Porirua, NZ: MJA Publishing Ltd.

Byrne, B. (1998). *The foundation of literacy: The child's acquisition of the alphabetic principle*. East Sussex, UK: Psychology Press Ltd.

Clay, Marie. M. (1993). *The observation survey of early literacy achievement*. Auckland, NZ: Heinemann Education.

Ehri, L.C. (2003). *Systematic Phonics Instruction: Findings of the National Reading Panel*. [www.standards.dfes.gov.uk/literacy](http://www.standards.dfes.gov.uk/literacy).

Ministry of Education. (2003). *Effective Literacy Practice in Years 1 to 4*. Wellington, NZ: Learning Media.

National Reading Panel. (2000). *Teaching Children to Read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction reports of the subgroups* (No. BBB35631). Bethesda, MD: National Institute of Child Health and Human Development.

Treiman, R., & Cassar, M. (1996). 'Effects of morphology on children's spelling of final consonant clusters'. *Journal of Experimental Child Psychology*, 63, 141–170.