

An Analysis of Year 4 and Year 8 Spelling Errors
From an Expressive Writing Task in the 2006
National Education Monitoring Project

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ABSTRACT:

Attention to the assessment and teaching of specific spelling skills seems to have received less attention than many other aspects of writing. A sample of 116 year 4 and 113 year 8 students' spelling errors that were made in one story writing task in the 2006 NEMP Writing Report were analysed in this study. The analysis included the extent to which the students were able (or prepared) to identify their errors and to subsequently correct them after consulting a Spell Write dictionary. Analysis was also undertaken to identify the particular spelling units that had caused the most problems for the students. The results from this study suggest that teachers could gain useful knowledge about students' spelling abilities if they use their error responses as an indicator of future teaching needs.

INTRODUCTION

“Even though good spelling is a prerequisite for being a literate person, it has not received as much attention as reading, both in terms of research studies and instructional recommendations that follow from research findings” (Joshi & Aaron 2005, p. 1).

Joshi and Aaron (2005) suggest that there are three possible reasons why spelling research has not received much attention. They suggest that there is an erroneous belief that spelling ability is developed by rote visual memory. Second, they suggest that correct spelling may be facilitated through such devices as computer spellchecking functions, which don't require accurate spelling knowledge. The third reason cited for a possible lack of research into spelling issues relates to another erroneous belief that English spelling conventions are based on a chaotic and irregular orthography which makes instruction appear rather pointless. While there may be some elements of truth underpinning each of these claims, there is convergent research that provides support for the explicit teaching of spelling skills (Rittle-Johnston & Siegler, 1999; Templeton & Morris, 1999).

Spelling ability development

Several researchers would argue that spelling ability is not based entirely on rote visual memory but rather on an understanding of several characteristics of words including the orthographic phoneme-grapheme and syllabic representation, the

meaning-based morphemic components, and a general familiarity with the visual representation of the words (e.g., Brann, 1996; Brann & Hattie, 1995; Ehri, 2000, 2004). According to Moats (2005), spelling ability can be “more accurately described as a continual amalgamation of phonological, morphological and orthographic knowledge” (p. 15).

One theory of spelling (and reading) development maintains that proficient spellers (and readers) require both cipher-phonological, and lexical-morphological, knowledge. The spelling of regular words where each sound is represented by one letter (e.g., cat, dog) makes use of knowledge of the cipher (Ehri, 1997). On the other hand, to spell irregular words where sounds may be represented by combinations of two or more letters (e.g., h + ou + se for house, n + igh + t for night) requires lexical knowledge of larger spelling units. However, a compounding problem with many irregular spelling patterns is that often there is more than one way to spell a particular sound (e.g., late, bait, weight, great etc) and the writer must be able to recognise which is the correct spelling for the word. Selecting the wrong spelling pattern (e.g., wate for wait, or grait for great) is a common problem with many developing spellers. In these particular errors, the spellings may have acceptable phonemic representations but are still incorrect.

Teaching of spelling in New Zealand

Brann and Hattie (1995) argue that even where research has demonstrated that while more attention should be given to developing phonological-based spelling programmes, most teachers are reluctant to do so. In their survey of 110 primary school teachers' perceptions of effective spelling programmes, the authors found that only junior level teachers were likely to incorporate aspects of research-based best practices into their spelling. Brann and Hattie (1995) concluded that “the junior teachers were far more aware of the phoneme analyses that underpin successful spelling strategies, whereas their more senior peers tended to believe that spelling was a consequence of storing words from reading, learning from errors, and having visual recognition of spelling skills” (p.45). Teaching strategies based on these latter assumptions usually included the rote learning of lists of morphologically and orthographically unrelated words in preparation for a weekly test. As a result, it may be assumed that there is little recognition of the need to assess spelling ability at higher primary school levels.

Assessment of spelling

Teachers are able to learn much about students' spelling abilities if they analyse the spelling errors in order to see why certain words are misspelled. While the early spelling attempts of very young children may be rather haphazard and lack consistency, the spelling approximations made by older primary school age students are seldom so (Steffler, Varnhagen, Friesen & Treiman, 1998). An analysis of the spelling errors made by older (e.g., year 4 and above) children enables an insight into their particular strengths and weaknesses at the phonemic and morphemic levels of word knowledge. This paper focuses on the spelling errors from a sample of year 4 and year 8 students that occurred during a free writing task given as part of the 2006 National Education Monitoring Project writing assessment cycle.

The New Zealand National Education Monitoring Project (NEMP)

“New Zealand's National Education Monitoring Project (NEMP) commenced in 1993 with the task of assessing and reporting on the achievement of New Zealand primary school children in all areas of the school curriculum” (Crooks, Flockton & White, 2007, p. 3).

The different curriculum areas are assessed over a 4 year cycle, for students in years 4 and 8, with the purpose of providing information on the relative performances of these two levels over the 4 years. In 2006 the third cycle of the writing evaluation was completed. A total of 2878 children (1439 year 4, 1439 year 8) were selected for this NEMP Writing evaluation. Several tasks were administered to evaluate writing performance from three forms of writing that included Expressive Writing, Functional Writing and Writing Conventions. Expressive writing tasks involved free writing about particular topics to communicate personal feelings or ideas using the correct writing conventions. Functional writing tasks included activities that involved giving instructions, filling in forms, preparing advertisements and writing letters or descriptions.

The evaluation of writing conventions involved assessing the students' performances in spelling, punctuation and grammar. The NEMP administrators (see Crooks et al. 2007, p. 17) analysed four elements of the content (vividness, relevance, detail, and communicating personal feelings) and eight elements of editing (extending, inserting, substituting, reorganising, deleting, punctuation, paragraphing

and spelling changes). However, the only ‘analysis’ of the *spelling* undertaken by the NEMP administrators involved rating the amount of spelling changes. These were recorded on a three-point qualitative rating (e.g., substantial, slight, none). The purpose of this study was to specifically investigate the spelling error status for each student’s writing performance in more depth.

METHOD

Purpose

The main purpose of this study was to analyse the spelling errors made by a sample of year 4 and year 8 students who had completed an Expressive Writing Task that was part of the 2006 NEMP writing assessment. No analysis of the actual spelling errors was undertaken in the NEMP report yet there was a particularly rich source of data made in these writing samples to allow for such an analysis.

Participants

Participants consisted of 116 year 4 and 113 year 8 students who had completed the Expressive writing task titled *A Day I’ll Never Forget* (Crooks et al, 2007, pp.16-21). This number represented approximately 25% of the national sample of students who had completed this particular task in the 2006 NEMP writing cycle. Table 1 presents a summary of the participants investigated in the study.

Table 1: Summary of Participants

Year 4		Year 8	
Boys	Girls	Boys	Girls
60	56	62	51

Procedures of the NEMP task

The Expressive Writing Task: *A Day I’ll Never Forget*

During the NEMP administration this writing task was presented over a three-day period. On day 1 the students were shown a short video clip of still pictures of children taking part in special events. The video clip was used as motivation for the writing task. The following instructions were given for Day 1:

Today you are going to think about and plan what you will be writing.

We'll start by watching a video which will help you get started. It shows some times that are special to people, and should help you start thinking about times that are special to you. Your writing is to describe a day you'll never forget.

The students were given five minutes to record their ideas, after which the lesson was concluded.

On day 2 the students were given the following instructions:

Yesterday you started to think about what you will be writing. It is about a time that is very special to you; a day you'll never forget. I'm going to give you back your booklets and today you will have time to do your writing (Crooks et al., 2007, p. 16).

The students were allowed 20 minutes to write their accounts for this task.

On the third day the following instructions were given:

Yesterday you did some writing. Today you are to check it through very carefully and make any changes or improvements that you think should be made. If you want, you can also use a Spell Write. (Crooks et al. 2007., p. 16).

The students were allowed 10 minutes for the completion of this task

Note: A *Spell Write* is a dictionary containing most of the common words that New Zealand children use during their regular writing. The words are listed alphabetically.

This expressive writing task was a useful activity to analyse because the students were given unrestricted choices for the words that they selected for their accounts. Furthermore, most students would have been able to write a satisfactory and representative number of words within the 20 minute timeframe. It was also assumed that by having access to the *Spell Write* (Croft & Mapa, 1998) writing dictionary that this would/should also have encouraged the students to correct (during the editing stage of this task) any misspelled words that may have also appeared in the *Spell Write* text.

Procedure for this study

Each student's writing sample was analysed and the following data was recorded for further investigation.

- Total number of words written per story
- Total spelling errors per story
- Total spelling errors identified per story
- Total spelling errors corrected per story
- Total number of spelling errors per story appearing in Spell write
- Total *Spell Write* errors identified per story
- Total *Spell Write* errors corrected per story

Further analyses of spelling error types were also undertaken to investigate the occurrence of the positional locations of the spelling error patterns and the main categories of recurring spelling errors.

RESULTS

Spelling errors identified and corrected

The data in Table 2 summarise the mean word writing performances and spelling error status by gender and year level for the samples.

Table 2: Summary of Mean Word Writing, Spelling Errors, Levels of Error Identification and Corrections per Story as a Function of Gender and Year Group (SD in Parenthesis)

	Year 4		Year 8	
	Boys	Girls	Boys	Girls
Mean total words	101 (54.7)	138 (74.8)	226.2 (83.7)	266.9 (75.0)
Mean total spelling errors	9.9 (6.7)	8.4 (6.1)	7.0 (6.8)	5.0 (5.7)
Mean errors identified	2.5 (2.4)	2.3 (2.7)	1.3 (1.8)	1.3 (1.8)
Mean errors corrected	1.4 (1.9)	1.1 (1.4)	1.0 (1.5)	1.0 (1.4)

As would be expected, the year 8 cohorts (both boys and girls) wrote longer passages of text than the year 4 groups. Furthermore, the girls in both year groups wrote longer stories than the boys. The spelling errors per story ranged from 9.9 for year 4 boys to 5 errors for the year 8 girls. The mean number of these spelling errors

that were identified per story ranged from 2.5 for year 4 boys to 1.3 for both groups of year 8 students. The mean number of total spelling errors that were corrected was similar for all four groups ranging from 1.4 for year 4 boys to 1.0 for both year 8 groups.

Spelling errors of words in *Spell Write*

While the students made several different types of errors including the misspelling of place names (e.g., names of countries) and people's names, these particular errors were not subjected to analyses in this study. However, many of the errors were also words that appeared in the *Spell Write* text, and these were analysed as a separate subset of errors. The results in table 3 summarise the data from the errors appearing in the *Spell Write* text.

Table 3: Final Status of Total Spelling Errors Appearing in the *Spell Write* Text (and percentages) as a Function of Year Group and Gender

	Year 4		Year 8	
	Boys	Girls	Boys	Girls
Total spelling errors	572	449	436	215
Total errors <i>Spell Write</i>	489 (85.4%)	392 (87.3%)	362 (83%)	215 (81.4%)
Total errors identified	127 (25.9%)	115 (29.3%)	78 (21.5%)	50 (23.2%)
Identified errors corrected	80 (62.9%)	62 (53.9%)	64 (82%)	44 (88%)
Errors corrected	80 (16.3%)	62 (15.8%)	64 (17.6%)	44 (20.4%)

The data in table 3 show that, for all cohorts, most of their spelling errors were words that appeared in the *Spell Write* dictionary. This was important because opportunities for these errors to be corrected should/would have been greatly enhanced as each student was given a personal copy of *Spell Write* (and reminded to use it) during the corrections/alterations phase of the writing task. However, before any spelling error is corrected it must first be identified (e.g., recognised) by the writer as an error. If the writer does not identify his/her errors, then it would not

expected that they would be corrected. To assist in this task the students were asked to use a different colour pen (i.e., red) to make any corrections and alterations on the final day of the writing activity. The use of the different coloured pen made the subsequent editing more readily transparent, and it enabled an in-depth analysis of both the level of error identification and the subsequent levels of correction rates (if any).

In all four cohorts, over 80% of the spelling errors were words that also appeared in *Spell Write*. This number ranged from 87% for year 4 girls to 81% for year 8 girls. However, the percentage of these *Spell Write* words that were *identified* as errors ranged from 29% (year 4 girls) to 21% (Year 8 boys). Although most of these words were identified as errors (e.g., by being underlined, circled or as second spelling attempts) at the editing stage, this ‘identification’ stage offered no guarantee that all these words would all be subsequently corrected even though the *Spell Write* dictionary was available. The results show that 88% of the *identified* spelling errors made by the year 8 girls had been subsequently corrected from *Spell Write* (versus 82% for year 8 boys). However, this percentage was lower for the year 4 students (62% for year 4 boys versus 53% for year 4 girls). This finding demonstrated that (for the older students), their *identified* spelling errors (that also appeared in *Spell Write*), were generally more likely to have been corrected than were the similar errors made by the year 4 students.

Analysis of spelling error types

The analysis of the spelling errors that students make enables teachers to see where particular problems occur. A common practice in many schools is for teachers to assess spelling ability that is based solely on whether words are correctly spelled or not, with no credit given for correct parts or spelling patterns. However, if teachers are able to view each error as ‘a window into each student’s ability to spell the known versus the unknown parts’, then more effective instructional strategies are likely to occur. The spelling errors investigated in this study were analysed according to both their *phonemic* acceptability level and their level of *graphemic* correctness. Examples of how this level of spelling error analysis was undertaken are presented in Table 4. Many of the spelling errors contained the correct number of ‘grapho-phonemically acceptable’ phonemes (e.g., slowp for slope, candels for candles), which, in normal writing situations in the classroom, may be regarded as ‘low level’ errors. However,

an analysis of such error patterns enables the teacher to identify what particular parts of the target words cause problems for the writer. Such information would also assist the teacher to develop more focused spelling interventions. The spelling errors were also analysed to indicate the extent to which the graphemes were positionally correct (for example, in either the initial, medial or final positions). The data in Table 4 presents some representative examples of the different phoneme and grapheme analyses that were used in the study.

Table 4 Typical Examples of Positional Placement of Graphemes and Level of Phonemic Acceptability of Spelling Errors

Error example	Phonemic acceptability (all positions)	Correct graphemic positions		
		Initial	Medial	Final
Slowp (slope)	✓	✓	-	-
Neclis (necklace)	✓	✓	-	-
Candels (candles)	✓	✓	✓	-
Rollar (roller)	✓	✓	✓	-
Cheak (cheek)	✓	✓	-	✓
Safty (safety)	✓	✓	-	✓
Wich (which)	✓	-	✓	✓
Will (while)	✓	-	✓	✓
Frist (first)	-	-	-	✓
Yle (while)	-	-	-	✓
Thry (tries)	-	-	-	-
Paly (play)	-	-	-	-

The data in Table 5 show the distribution of the percentage of spelling errors that were *phonemically* correct in all positions and the percentage of words that had correct positional placements for graphemes. These ranged from 43% for year 4 girls

to 62% for year 8 girls. Approximately 50% of both groups of boys' spelling errors were also *phonemically* correct in all positions. The analysis of the level at which the correct graphemes were represented shows that approximately 50% of all errors contained the correct grapheme representation in the initial position and approximately 31% of the errors contained the correct *graphemic* representation in the final position. The area causing the greatest problems appeared to be in the medial position of words where only between 13% (year 4 boys) and 17% (year 8 girls) of errors contained the correct medial spelling.

Table 5 Percent of Positional Placements of Graphemes in Spelling Errors

		Phonemically acceptable in all positions	Grapheme position correct		
			Initial	Medial	Final
Year 4	Boys	48%	52%	15.5%	31.6%
	Girls	43.6%	53.7%	14.3%	31.9%
Year 8	Boys	52%	49.6%	13.5%	31.5%
	Girls	62.9%	49.2%	17.2%	31.6%

A second level of analysis of the spelling errors was undertaken that involved investigating the occurrence of particular spelling pattern problems. Examples of these recurring spelling patterns' problems are summarised under the categories included in Table 6.

Table 6 Examples of the Different Spelling Pattern Problems

Error Category	Examples
Homophones	allowed/aloud to/two/too their/there
Endings	bussin (ise) skinn (ey) troph (ie) jump (d)
Vowel blends	happ(l) y fun(r) al ch (as) th(ay) n(ihgt)
Vowel digraphs	ag (ia) n rec (ie) ve t (o) let br(a) ds
Not doubling consonants	ma(t) ress gra(b) ed o(f) rea (l) y
Over-doubling consonants	unti(ll) contro(ll) ba(bb) y
Consonant digraphs*	pa(k) ele (f) ant (w) en du (ch) s (w) ich
Consonant blends	(G) andma (th) ry c (or) ss

*Consonant digraphs are two consonants that represent one sound (e.g., pack, when).

The largest groups of spelling patterns causing concern for all students included the vowel blends and vowel digraphs. Many students also misspelled many words by omitting a second consonant (e.g., *matress*, *grabed*).

Table 7 Total Numbers for Each Spelling Error Category and Percent of Total Errors (in parenthesis)

	Year 4		Year 8	
	Boys	Girls	Boys	Girls
Homophones	28 (4.8%)	13 (2.9%)	30 (6.8%)	9 (3.4%)
Vowel blends	289 (50.5%)	213 (47.4%)	179 (41.0%)	109 (41.2%)
Vowel digraphs	129 (22.5%)	122 (27.1%)	111 (25.4%)	73 (27.6%)
Not doubling consonants	56 (9.7%)	38 (8.4%)	68 (15.4%)	37 (14.1%)
Over-doubling consonants	6 (1.0%)	15 (3.3%)	16 (3.8%)	10 (3.8%)
Consonant blends	26 (4.4%)	25 (5.5%)	18 (4.1%)	12 (4.5%)
Consonant digraphs	41 (7.1)	24 (5.4%)	15 (3.4%)	14 (5.3%)

DISCUSSION

Several key findings may be taken from this study. The first relates to the generally low levels at which the students were able to *identify* their spelling errors. Common sense would suggest that errors are not likely to be corrected unless they are firstly identified as errors. A key teaching focus for teachers might be to encourage/help students to show them how to identify errors. Tasks such as those assessed in the *Supplementary Spelling Assessment* (Croft, 2007), where words are presented with variant spellings (e.g., borther for brother, famly for family) and the student is required to identify the correct word from a selection, would be useful. Students might be expected to have trouble spelling words that may not necessarily be in their general spoken or writing vocabulary. However, the results from this study demonstrated that *most* of the problematic words were also in the *Spell Write*

dictionary, and that such words are representative of the types of words that primary school children from year 4 and older would normally be familiar with.

The second concern related to the low correction rates of the spelling errors that were made in the stories. Even where the words had been identified as incorrect, many of them were still not corrected even during the final day when they had been specifically asked to check through, identify any errors and to make any changes. Of particular concern were the uncorrected words that had appeared in the *Spell Write* dictionary. Even though the students were each given a personal copy and reminded to use their *Spell Write*, the high number of spelling errors that remained uncorrected demonstrated that very few students had made use of the text to help with the correct spellings.

The value of undertaking a 'running record-type' of analysis of spelling errors (as was done in this study) was shown to be an effective way of assessing students' spelling abilities and to locate the potential problem areas that students were having with different words. The analysis revealed what parts of words caused the main problems and this knowledge would enable teachers to design more focused spelling interventions that more effectively address these particular problem areas.

While advocates of phonetic spelling programmes would be satisfied with errors that contain phonetically acceptable spellings (and nearly 50% of all the errors fell into this category), the data from this study demonstrates that many students rely heavily on this level of presentation even at year 8 level. It is therefore highly likely that these older students will remain phonetic spellers into adulthood unless they are given effective strategies for overcoming these problems. It is suggested therefore that spelling interventions that focus on the larger unit awareness in words may be more beneficial for students with spelling problems than interventions that don't focus on such awareness.

Finally, the results of this study demonstrate that the students had significant problems with the spelling patterns in the medial parts of the words. This is also a problem for reading as many older students with reading difficulties have problems with the medial parts of unfamiliar words (Ehri & Saltmarsh, 1995). An effective spelling programme should therefore include a focus on encouraging the students to locate all the relevant spelling patterns within the word, and in particular, the medial patterns. This will involve programmes that include explicit instruction in teaching students to focus on all sections within words and that such instruction will require

teachers to not only use words from the students' own writing errors, but to also include words selected from wider sources. Croft (2007) however, argues that "spelling is a skill best acquired within the context of learning to write provided that all words to be studied are necessary for each individual's writing [and that] such words are rooted in students' everyday requirements or programmes within their own classroom" (p. 7). This statement suggests that each student's programme requirements (in terms of learning to spell) should be satisfied through their own writing requirements and nothing else. Teachers who adhere to this rather narrow view of their students' spelling needs will be less likely to introduce their students to the wide array of spelling problems than would teachers who follow a more explicit and structured phonological-based programme that focuses on introducing students to the issues demonstrated in the current study.

CONCLUSIONS

Students who are learning to spell in English are presented with many challenges. While several researchers argue that the irregularity of the orthography is the main problem, there is an acceptance that there is in fact, a much higher level of orthographic and phonological regularity than was first thought (Kessler & Treiman, 2003). Although the retention of foreign spellings often cause many of the irregularity problems associated with English orthography, Hayes, Kessler and Treiman (2005) maintain that such words "can also lead to other kinds of regularities in spelling that provide a great deal of information about words" (p. 9). Some of these regularities include the vowel blend patterns. However, as Hayes et al. further note "if the sounds around the vowel are taken into consideration, the vowel's spelling often becomes more consistent. If the beginning consonant context is taken into account, average vowel consistency increases from .53 to .65" (p. 9).

A teaching focus that encourages an awareness of larger units (e.g., vowel digraphs, vowel blends, consonant blends) when studying the orthography of words for spelling, may be particularly beneficial for helping students develop a familiarity with these components and to help them to remember these units when spelling them. This is best complimented when followed by instruction in morphological patterns such as prefixes and suffixes (e.g., Henry, 2003).

Finally, if teachers use students' spelling errors as indicators of larger orthographic unit awareness (or lack of), then they are likely to develop more focused spelling instruction. Conversely, teachers who are only interested in whether the word *as a whole* is spelled correctly, or whether the spelling attempt is *phonetically* acceptable, will be less inclined to develop a spelling intervention that encourages students to focus on the relevant components that cause the problems. As Moats (2005) states, "Developmental studies suggest that individual sounds and letters, letter sequences within sounds, syllables and their combinations, and knowledge of prefixes, roots, suffixes, are all targets for good spelling instruction" (p. 15). This study demonstrated that the students had problems with many of these particular units within the words that they had spelled incorrectly, and therefore teachers who are aware of these problems could use such knowledge as a basis for formulating more focused spelling interventions.

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