The Importance of Teaching Phonological-Based Spelling Skills

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ABSTRACT

In a recent study we (Greaney & Arrow, 2009) undertook an analysis of the types of spelling errors that students had made during a National Education Monitoring Project writing task (Crooks, Flockton & White, 2007). We discussed several issues related to spelling, including the value of analysing students' error-response patterns as a way of identifying some of the likely causes for these errors. As Bissaker and Westwood (2006) note "A pattern of errors (miscues) can indicate children's grasp of regular grapho-phonic relationships and their awareness of less predictable letter sequences" (p. 25). In the current paper the relevance of analysing spelling error-responses as a source of data from which to design further explicit spelling instruction is discussed. Some possible teaching activities that may be used with either small groups or whole classes that aim to develop (in students) a more in-depth orthographic knowledge of words are also presented.

Practice Paper

Key Words: Spelling, spelling error analyses, spelling instruction

The Importance of Spelling Error Analyses

More than thirty years ago Freyberg (1980) stated that "we need to observe the spelling of individual children more carefully to diagnose the apparent source of their difficulties and to help them overcome these in their own unique way" (p. 246). From his findings Freyberg suggested that teachers needed to include more word study activities as part of their spelling programmes, rather than rely almost entirely on the presentation of weekly lists of words to memorise. Allcock (2005) has also noted the importance of spelling error analysis when she states that "in order to teach students how words work in written English, teachers must have this knowledge themselves. Teachers need to be able to analyse spelling and reading errors to discover the nature of students' errors to inform instruction" (p. 24).

More recently, Brann and Hattie (1995) found in their study of spelling programmes in primary schools that very few teachers were using research-based best practices to teach spelling that involved using explicit word study activities. In this study Brann and Hattie found that the main method of teaching spelling was to use weekly word lists. Joshi, Treiman, Carreker and Moats (2008-2009) also noted that the predominant spelling instruction appeared to be based on the (incorrect) perception that efficient spelling was perceived by teachers to be based mainly on visual memory and was therefore considered a matter of relying mainly on rote memorisation of arbitrary lists of words.

Why the Reluctance for the Explicit Teaching of Spelling?

It is often assumed (within a pedagogical-constructivist curriculum) that most of a student's spelling needs may be satisfactorily met from personal writing and that teachers need look no further than the students' writing requirements when designing specific interventions. In support of this claim, Croft (2007) argues, for example, 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" (p. 7). This view is also reinforced in the Ministry of Education (2007) text *(Effective Literacy Practice in Years 1 to 4)* where teachers are reminded that "everything a teacher needs to know about children's developing spelling knowledge is displayed in their writing" (p. 148).

However, it is suggested that if teachers adhere to such a narrow and restrictive source of (writing) data from which to design spelling instruction, the result would likely be failure to address many of the most likely causes of poor spelling. The main reason for this is that the poor spellers are already likely to write fewer words than more competent spellers and furthermore, the words that they do attempt in their writing would most often be the ones they already feel comfortable writing. This finding is supported by earlier research by Freyberg (1980) and

which is reported in Nicholson (2000). On the basis of Freyberg's findings, Nicholson (2000) reports, for example, that "the poor speller writes less and gets less practice in checking spellings, [and], they also tend to write only the words they know how to spell and so do not extend their spelling knowledge" (p. 224).

It is doubtful, therefore, that the errors made in personal writing will contain sufficient *variety* of error types to adequately inform the teacher of all the relevant teaching the poor spellers may need. While some students may develop effective spelling strategies from (and only) their personal writing, there are nevertheless many others who will not develop such strategies without explicit spelling instruction outside and beyond the context of regular writing.

Reasons for Explicit Spelling Instruction

Explicit phonological-based spelling instruction can serve two purposes. The first is that such instruction enables students to better-understand the nature of the orthographic system of written English and such knowledge assists them to see the level of orthographic transparency at the same time. The second purpose (and value) of including explicit phonological-based spelling instruction is to increase general decoding skills. Because reading and spelling develop to a large extent in a reciprocal way, the skills required for one can be transferred to the other. While not all efficient readers are also efficient spellers, most efficient spellers are more likely to also be efficient readers. Knowledge of the relevant phonological patterns that are required when spelling words are the same patterns that the reader would use when attempting to decode unfamiliar words during reading. The more physically demanding role of transferring phonemes to graphemes (i.e. spelling) versus the less physically demanding role of transferring graphemes to phonemes (i.e. reading) is another advantage that explicit spelling instruction presents for many students. The ability to identify and write (i.e. spell) these patterns in an explicit spelling lesson offers an opportunity for the student to dwell longer on (and internalise) the orthographic patterns to a greater extent than would normally occur in a passing occasion such as just viewing the printed word on the page when reading.

Stumbling Blocks to Correct Spelling

There are several 'stumbling blocks' that affect a student's ability to correctly spell words which include poor speech/hearing, poor vocabulary and poor phonemic awareness. The nature of English orthography may also present students with particular problems because many words contain spelling patterns that have variable levels of orthographic

regularity and consistency. As Allcock (2005) notes, English has a deep orthography and there are many different ways for writing one sound (**c**at, **k**ettle, li**ck**, a**cc**ount, **C**hristmas, **q**uick) and many ways of pronouncing a particular letter, and these different pronunciations are often determined by the boundary letters that surround the word (e.g. **a**pple, w**a**ter, c**a**me, **a**bout). This so-called 'phonological and orthographic irregularity' is often cited as a main reason for not teaching word-level skills (or phonics-based instruction). However, the research evidence now suggests that English orthography is considered to have a much higher level of orthographic/phonological regularity than was first thought (Kessler & Treiman, 2003). As noted, single letters often represent different sounds depending upon the boundary or surrounding letters in the words, but if the larger spelling units are taken into account when deciding on the pronunciation of these letters, then these units become more regular with often many words sharing the same orthographic pattern and sound. Gough (1993) argues for example that:

> For all its irregularity, English is an alphabetic system: there are systematic correspondences between the letters of written words and the phonemes of spoken words. The correspondences are numerous and complex. Almost none of them are one-to-one (that is, a single letter mapping to a single phoneme). Instead, they are context-dependent; the pronunciation of nearly every letter depends on the surrounding letters" (p. 189).

The role of the teacher is therefore to teach students the relevant strategies to cope with this 'hidden regularity' and one way to do this is through explicit spelling instruction that focuses on developing spelling unit awareness using both an orthographic and a phonological 'set or diversity' (Venezky, 1999).

A Spelling Test for Teachers

At an in-service course about the teaching of spelling, an Australian literacy educator (Ferrari, 2007) gave a group of 39 teachers a short spelling test containing eleven words. The average score per teacher on this test was 6.7 and the scores ranged from 0 - 10. There were no error response analyses undertaken with these words, as only the total numbers correct were recorded. To compare the performances of the Australian teachers on the test a group of 26 trainee teachers were also given the eleven words as a spelling test and their error responses were analysed. The results from both the Australian teachers and the pre-service trainees are presented in Table 1.

Table 1

Scores for the Australian teachers and the trainee teachers

Word	Number Who Spelled Correctly	
	Australian Teachers (n=39)	**Trainee Teachers (n=26)**
exemplary	25	19
conscientious	26	7
embarrassing	22	7
subterranean	17	1
maintenance	27	12
adolescence	23	15
exaggerate	30	18
customary	32	20
miscellaneous	22	9
proprietor	27	8
substitute	36	23
Mean score	6.7	6.0
Range	0-10	1-10

Like the Australian teachers, the trainee teachers' scores ranged from 1 to 10 and their mean score was also 6. Another interesting result from the comparative data was that in both samples the most difficult word to spell was subterranean with 17 Australian teachers (43%) spelling it correctly compared with only one pre-service student. It is also interesting to note that the easiest word to spell by both groups was substitute with only 3 teachers in both samples not able to spell it correctly. While these raw scores from the tests are interesting, it would be difficult for a teacher to design an effective spelling intervention that would be relevant for the specific teaching needs of each student unless the individual error responses were further analysed. For example, for the most difficult word (subterranean), the trainee teachers had used ten different spellings (subterrian, subterrainian, subterrainean, subterreannean, subterriaioun, subtranian, subterrain. subteranian, subteranium and subterranin). While many of the attempts were phonetically acceptable (Greaney & Arrow, 2009) and that most of these attempts indicate that the first two units/syllables (sub + ter) were generally correct, the remaining orthographic patterns appeared to cause the most difficulties. The word causing the second highest number of errors (embarrassing) also showed a similar pattern of results for the teacher trainees, where fifteen different variations of the correct spelling were recorded. However, five trainees had included only one r (embarassing) and five had included only one s (embarrasing). The decision to include one or two consonants (s and r) in this particular word was therefore a recurring issue with many of the trainee teachers. Although these error response patterns were not analysed for the Australian teachers, it is highly likely that similar responses would have occurred for this group.

Teaching Implications From These Spelling Errors

Before students are able or prepared to self-correct their spelling errors within their regular writing, they must first have an awareness that an error has actually been made. Unless errors are actually recognised by the speller as incorrect, there is little likelihood that they will be corrected at all (Greaney & Arrow, 2009). Therefore encouraging students to be willing and able to identify/locate possible spelling errors is a first step in the correction process. Such an awareness (of what looks right) may be termed a 'spelling conscience' and such an awareness can only be developed if the student already has a familiarity with the correct version of the spelling.

Building a 'Spelling Conscience' of What Looks Right

An activity that a teacher might include to encourage the development of a 'spelling conscience' involves presenting the students with lists of words in which only one from each list has the correct spelling. The task is that the students are required to identify (i.e. underline/highlight) the word that is correct.

Task 1: Underline or highlight the correct spelling in each line of words

maintaince	mantanance	maintenance	mantenance
exaggerate	exgerrate	exaggarrate	exaggerat
propeter	propiroter	propritor	proprietor

Identifying the 'Problem Bit(s)' in Words

While most English-written words have aspects of orthographic regularity, there are nevertheless many words that contain orthographic units with irregular patterns. These units may be irregular because the spelling patterns do not fully match the expected pronunciation (e.g. stomach, come, love, yacht,). A second problem (for the novice speller and reader) is that many of these units may represent different sounds when they appear in different words (e.g. st**om**ach versus st**om**p, c**ome** versus h**ome**, l**ove** versus st**ove**, and w**at**er versus w**at**ch versus h**at**). A key to an effective word-based spelling programme is to include activities that encourage the students to become aware of these irregularities (for both spellings and pronunciations) and to also encourage them to use flexible approaches when attempting to spell and decode such words. A flexible spelling approach could include writing out several alternatives and to select the one they think is the correct spelling. Similarly, when reading, a flexible decoding approach might be to encourage the student to try several alternative pronunciations (in conjunction with sentence context) to confirm their decoding attempts. This strategy to try several plausible pronunciation possibilities is known as 'set for variability' (see Task 2 below). However, for the strategy to be implemented, the student must also be consciously aware of the particular orthographic unit(s) within the word that require such a focus. The second task develops such awareness by encouraging the student to locate the likely problematic spelling patterns/units within irregular words.

Task 2: Read these words and underline the 'hard' bits

stomach	come	love	yacht
eight	laugh	people	taught

Another likely problem that many novice spellers have when attempting to correctly spell unfamiliar words relates to the orthographic variability that many single sounds (phonemes) represent in the written form. Evidence for this problem arises when students spell using phonetic approximations rather than the correct representations (e.g. tort for taught, sed for said, etc). Task 3 may help these confusions.

Task 3: How many ways can you spell the same sound but in a different word?

Target sound	Answers						
Long a as in **ai**m:	day	eight	great	they	baby		
Or as in f**or**:	saw	talk	taught	four	more	thought	sauce

This conscious level of awareness of what letter or letter group (i.e. orthographic pattern) actually represents the sound often requires explicit teaching to many students. This is because in many cases, such sounds may be represented (in the written form) from combinations of up to four letters (as in the examples in Table 3). Furthermore, some of these orthographic patterns may not 'look' authentic or plausible, and therefore the student may require a higher level of conscious awareness of these variant patterns for them to be internalised and recalled automatically when required for spelling.

A variation of Task 3 could include presenting the students with this list of words and requiring them to identify (circle or underline) a particular target sound that each word contains. To complete this task successfully, the students would be required to identify all the **letter(s)** that represent the particular **sound** (e.g. d-**ay**, **eigh**-t, gr-**ea**-t, th-**ey**, b-**a**-by). This task highlights the point that the spelling patterns that represent a particular sound may include a single letter or several letters (e.g. b**a**by versus **eigh**t). It also highlights the concept that the phonological (or pronunciation) representations of many spelling patterns are dependent upon the surrounding or boundary letters within the word (e.g. w**at**ch versus c**at**ch versus w**at**er) and/or the surrounding words in the sentence (e.g. He wound the bandage around the wound).

CONCLUSIONS

These spelling activities are designed to encourage a higher level of word (and sub-word) level awareness than would normally be the case in regular spelling programmes that rely only on either the rote memorisation of whole words or where spelling programmes are based only on the particular spelling errors that individual students make in their *writing*. The activities also help to highlight the idiosyncrasies that are present within the English orthographic system but at the same time, (these activities) also highlight the *frequency* with which the idiosyncrasies occur and more importantly, how to deal with them in both spelling and reading situations.

Teaching students how to cope with the spelling (i.e. orthographic) patterns within English words and the particular and variant sounds that they represent, has been a topic of debate almost as long as the debate about how we should teach reading. The predominant constructivist 'learn-to-read by-reading' (Smith & Elley, 2007) and the 'learn-to-spell-by-writing' (Croft, 2007; Ministry of Education, 2007) approaches that are regularly promoted in texts for New Zealand primary schools, have tended to downplay the explicit teaching (particularly out-of-context) of both phonics and spelling skills. It is acknowledged that many students may develop fluency in decoding merely by having opportunities to read widely and often. Similarly, it is also acknowledged that many students may develop proficiency in spelling, merely by having opportunities to write widely and often. However, most students require more explicit teaching of the particular sub-skills that underlie such proficiency in both reading and spelling. A belief that all students will somehow develop such skills 'by osmosis' from merely being exposed to books and/or writing opportunities, is a fanciful but unrealistic notion. This belief is a major concern given the importance of the reciprocal and developmental relationship that reading and spelling share. Explicit instruction in one area positively impacts on development in the other. Conversely, a lack of explicit instruction in one area may also negatively impact on a student's ability to improve in the other. There is now sufficient international research evidence supporting the importance of including the explicit teaching of orthographic patterns' knowledge for both reading and spelling, particularly for those students who develop early spelling and/or reading difficulties. Students should also find these activities both interesting and helpful for improving both their reading and spelling skills.

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