A critical analysis of the NAPLAN spelling test

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Abstract

The 2009 IAEA conference theme, Assessment for a Creative World, celebrates a movement towards schooling for creative students. Modern curriculum documents recognise that functional literacy, which enables students to be creative individuals within language, cannot be developed by formalistic methods such as memorising word lists. Nevertheless, aspects of such old-fashioned approaches to spelling persist in the spelling component of the National Assessment Program of Literacy and Numeracy (NAPLAN).

This paper critiques the design of the NAPLAN spelling. We outline a coherent model of spelling as epitomised in good curriculum and contrast this with the one implied in NAPLAN. (We need to infer the NAPLAN model because there is no NAPLAN test framework.)

We also contrast the test form used in the NAPLAN with the principles of valid assessment and item formats. We cast doubt on the validity and reliability of the NAPLAN spelling data. Our critique suggests two areas of special concern: that the test has a negative effect on classroom practice by delivering unhelpful or incorrect information to teachers and by encouraging the spread of discredited spelling constructs and instruction styles.

To substantiate our critique, we report on the results of our own longitudinal equating study.

Introduction

In 2008, the first *National Assessment Program of Literacy and Numeracy* (NAPLAN) was administered to Australian school students in Years 3, 5, 7 and 9. A program of the standardised, whole-population tests, NAPLAN undertakes to assess the literacy and numeracy skills in these year levels. The suite of literacy tests was made up of a writing test, a reading test and a test of language conventions which in turn was made up of two substrands: 1. spelling; 2. grammar and punctuation. The two substrands of the language conventions paper are scaled separately. It is the testing of the spelling substrand which is the focus of this paper.

In NAPLAN, spelling is tested through two forms of proofreading — the correction of an identified error and then through the identification and correction of an unidentified error. Credit is given for correct spelling. No differentiation in scoring is made between the single-step processing needed in responding to an identified error and the two-step processing needed to respond to an unidentified item. This, we argue, means that there is at best a lack of clarity in the information provided to teachers. At worst, the data provided may be seriously misleading.

In this paper, we will use data from the NAPLAN spelling items, as well as that from previous Queensland literacy tests, to critique the construction of the spelling items. The Queensland literacy tests used both dictation and proofreading items to construct a spelling scale. In addition, we will use data from a study begun in 2008 that compared student performance on the NAPLAN measures with that on a dictation task. This study collected data from a small sample of students from south-east Queensland and one provincial city.

Table 1: Number of participating students

Year 3	591
Year 5	651
Year 7	609
Year 9	443

These students were given the NAPLAN spelling items in a dictation task some 4-6 weeks after the test. Their dictation and NAPAN results were compared and the error patterns on each measure analysed. A qualitative examination of the error patterns provides data on which aspects of orthographic knowledge students have mastered and which present a challenge. This knowledge is significant as the teaching of spelling needs to be carefully structured for optimum learning of the English spelling system (Moats 1995; Templeton and Bear 2000, 1992).

What is spelling?

Traditionally spelling has been taught as a distinct strand within literacy, distant from the vocabulary it represented, the context in which it was used – writing – and the word decoding knowledge to which it was related. In classrooms, the language focus was on

teaching the sound-to-symbol relations of spelling, phonics, and the learning approach that of memorisation and rote learning. Beyond the early stages of learning, English spelling was seen as irregular, even chaotic with too many 'exceptions' for a systematic approach beyond the memorisation of a list of longer and more complicated words.

The assessment practices associated with a traditional approach treats all errors as equal. They are either right or wrong. Expressions like simple, difficult or challenging are used to identify the learning challenges of words. Those attributes that make words difficult or challenging are undefined or defined by instinct and/or experience. But the difficulty of apparent attributes such as length may well be contradicted by the data. Words such as *reflected*, correctly spelt by 86% of the Year 7 cohort, and *radiation,* spelt correctly by 79%[1], were considerably easier for students to spell than shorter words such as *bred,* spelt correctly by 45% of the cohort and *thaw*, spelt correctly by 26% of students. *Desolate,* a word spelt correctly by just 23% of Year 7 students, might at first glance seem to share the qualities of *reflected* and *radiation* but the unstressed, middle syllable increases the difficulty significantly. Researchers such as Hammill, Larsen and McNutt (1977) and Wilde (1992) questioned the efficacy of traditional approaches to spelling when they found that students who had received no formal instruction in spelling could spell at least as well as those who had. The implication of this is that the learning outcomes of the traditional spelling curriculum may not be due to the taught curriculum. These educational shortcomings of traditional instruction, together with the difficulty of using it to define and describe a spelling construct, make it unsuitable as the theoretical underpinning of a testing framework.

Of more promise is the current research regards spelling as a complex linguistic process. This a perspective that has its roots in Chomsky's (1976) recognition of spelling as a representation of the deep language structures rather than of 'surface phonetic forms'. From current research, we know that the English orthographic system is regular and structured, not arbitrary. It has levels of complexity and layers of coding. Knowledge of a word's spelling is linked to knowledge of its internal structure and how that structure represents sounds, meaning and function. Current perspectives on the teaching of spelling draw together two threads of spelling research — the first into student error patterns as an insight into orthographic understanding begun by Read (1975a, 1975b, 1971) and developed by Gentry & Gillett (1993), and the second research into the demands of the spelling system begun by Venezky (1999, 1980, 1970). As a result, both the system and the way students learn it have been described for teachers by researchers such as Bear, Templeton, Invernizzi and Johnston (2008, 1998), Henderson (1990, 1980), Cunningham, (1998), Ehri and Rosenthal (1997); Ehri (1984), Ganske (2008, 2002, 1999), Templeton & Morris (2000, 1999).

Evident from the research into spelling as coding knowledge of the deep structure is the relationships between spelling and other aspects of literacy. The orthographic knowledge acquired during spelling makes a positive contribution to word decoding during reading and contributes to vocabulary development (Beck, McKeown & Kucan, 2008, 2002; Ganske, 2008, 2000, 1999; Graves, 2006; Nagy and Scott, 2000; Templeton, Bear, Invernizzi & Johnston 2010). Knowledge of the higher-order coding of pronunciation such as stress patterns in syllables, vowel — *televise* to *television* — and consonant alternation patterns — *illustrate* to *illustration* but *explode* to *explosion; magic* to *magician* — and morphological coding make particular support decoding while etymological and morphological aspects of spelling contribute to vocabulary development. This situates spelling within the more general context of word study. The critical outcome is that students need to learn orthographic knowledge systematically, progressively and explicitly.

One implication from this research for test developers is the need to construct items that assess a student's orthographic knowledge as understanding of the deep language structures rather than the surface phonetic features of words. To do this, frameworks need

[1] Data cited from the 2007 Queensland Year 7literacy data set.

to be developed to test the deep structure. Such frameworks need to be robust enough to account for spelling performance in a way that commonsense or traditional views cannot. This would allow the construction of valid test items that can inform teachers about student performance and curriculum.

Current research reinforces the critical need to test spelling as a system.

Assessing spelling in NAPLAN

Like all assessment, cohort tests must be grounded on sound measurement principles, the first of which is the definition of the construct — a clearly articulated, unambiguous framework of the construct, in this case spelling ability, to be tested. Currently no such framework exists[2]. Such a framework would describe the assessable parameters of the ability, particularly those which can be assessed by a population test. A spelling framework should define the construct by providing a detailed map of those aspects of English orthography to be tested and should define the relationship of proofreading to other dimensions of the spelling construct.

Spelling has two broad dimensions, expressive and receptive. The expressive dimension consists of production where students are able to focus all their cognitive resources on spelling a word as they might in class tests or word games and generation where students have to produce correct spelling automatically, so that it allows them to concentrate on writing. The receptive dimension consists of proofreading to find their own spelling mistakes and to find the mistakes of others. NAPLAN uses two forms of proofreading to test spelling. Two forms of items are used: one with the error identified —

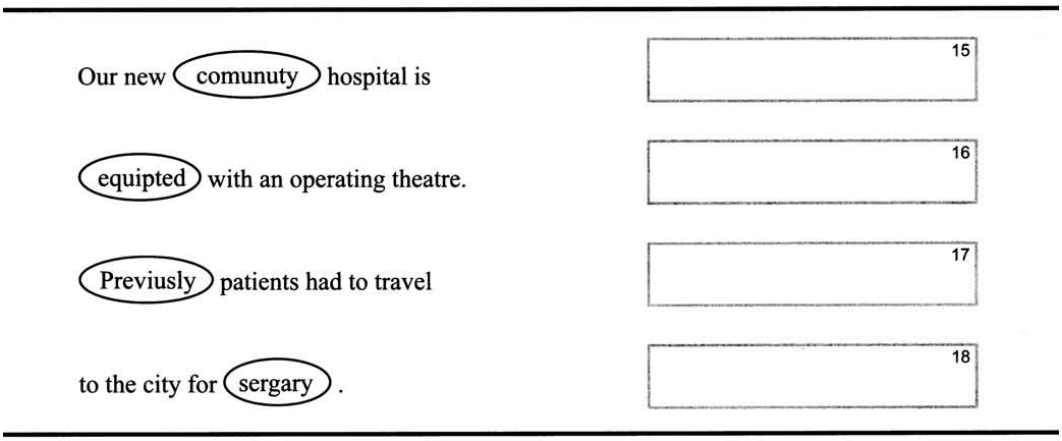

Figure 1: 2008, Year 7 word-identified items

[2] **Although the test constructor produced documents called frameworks for the 2008 and 2009 tests, these are technical test specifications rather than frameworks. The constructors also referred to the national *Statements of learning*. These documents are not specific enough to bring literacy and numeracy teaching into national uniformity; nor could they act as the basis for valid test items and forms. Most recently, National Minimum Standards have been drafted to replace the old Benchmarks of literacy and numeracy ability.**

and one where it is not —

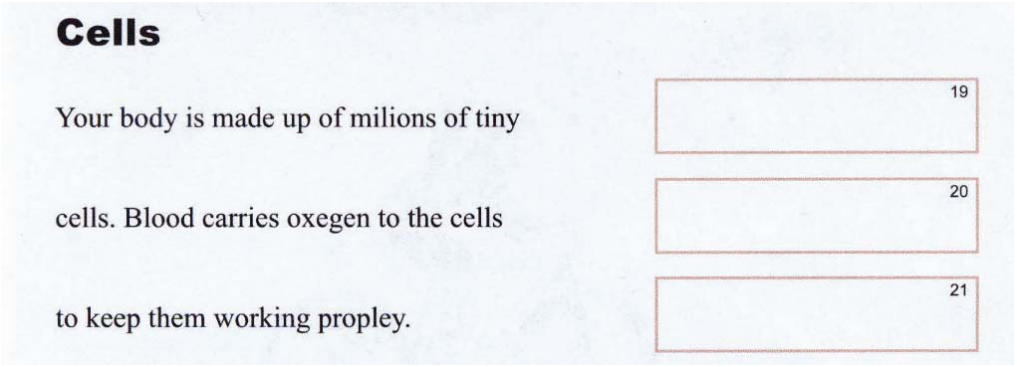

Figure 2: 2008: Year 3 word-unidentified items

Both forms of item are scored dichotomously despite the fact that unidentified items require two steps, rather than one to solve the problem. No distinction is made between students who correctly identify the target word and then misspell the word and those who chose and misspell another word, so that when the results are reported to teachers it is not clear whether students are unable to identify the target word or unable to spell it.

Not articulated is the nature of the relationship between this proofreading items of this nature and general spelling ability. While it would be expected that proofreading constructed errors requires organised, deployable orthographic knowledge, it also seems possible the nature of the misspellings may assist student performance. So, what knowledge do proofreading items use? What is the relationship between the receptive and expressive dimensions of spelling?

The critical question is, can data gathered from proofreading items like these act as a proxy for knowledge of the spelling system?

About the items

We raise three key issues about the NAPLAN spelling items for discussion.

- The nature of the misspellings
- The construction of difficulty
- The readability of the items.

We also note in passing some instances of technical faults in item and test construction for which further analysis is needed.

The nature of misspellings

The creation of the misspellings is formulaic. This partly results from the absence of an articulated research-based framework and partly due to an understandable desire to keep the items ‘pure’ by having a single item demand. There is also a result of the need to keep the target word readable for the students who must read the items and must be able to identify the misspellings as the intended target word.

- leave out a letter — lik (like), craked (cracked), weel (wheel), frends (friends), overwhelmed (overwhelmed)
  This formula is particularly used at the syllable juncture as in swiming (swimming), disapointed (disappointed), milions (millions), prescent (present)
- add a letter — This formula is particularly used at the syllable juncture as in consummed (consumed), fittnes (fitness)
- use a different vowel combination — broun (brown), arownd (around), lowdly (loudly), seet (seat), lizerd (lizard), taist (taste), animel (animal)
- substitute a letter — cumplained (complained), sinse (since)
- reverse a letter sequence — muscel (muscle), marothan (marathon)

The result of constructing items in this way is that the misspellings often contrast with authentic student errors. Several problems arise from this, not the least of which is that creating formulaic items is likely to encourage the teaching of testwiseness rather than productive spelling knowledge and skills.

Comparison of our sample students on both the NAPLAN and dictation measures showed that some created errors seemed to aid student performance, although the number of instances in which this was so was surprisingly few. When it does happen that misspellings assist students, they seem to do so because the misspelling supplies the information of which students are unsure. This is an undesirable effect. It follows that such misspelling prevents that item from testing the instructional level that the students have reached. This is the case with the seven words set out in Table 2. These are the only words which the students in our sample spelled better on the NAPLAN proofreading measure than on dictation.

Table 2: Words on which students performed better for NAPLAN

	Year 3	Year 5	Year 7	Year 9
Identified	complained (cumplained) +10.38%	vanilla (vanila) +1.56 volume (vollume) +4%	nil	substantial (substaintal) +1.58%
Unidentified	millions (milions) + 1.69%	millions (milions) + 5.36%	disappointed (disapointed) +0.33%	nil

These cases demonstrate the effect on facility rate caused by item design, especially the design of the target word misspelling. In the case of *complained*, for example, the constructed misspelling (*cumplained*) supported the spelling of the two elements in this word which Year 3 students typically misspell, the long *a* in the second syllable and the inflected ending *–ed*. The same explanation applies in the case of *millions*, which was misspelled with a single *l*. The part that Year 3 and 5 students are most likely to misspell, the *–ion*, is provided intact so that the doubling at the syllable juncture becomes an obvious and easily corrected error, as it is in *vanilla* and *disappointed*.

The only word which has significantly better results for NAPLAN than for dictation is *complained.* What this result masks is something potentially more sinister. As mentioned, misspelling the first syllable in this word (com–) is not the error that Year 3 students make

in spelling this word. Out of the 591 students who spelt this word in dictation, only three students misspelled the *com* this way. However, analysis of the NAPLAN errors for these students showed that as a result of exposure to the NAPALAN error, 135 students now included this in their misspelling of the word. We will return to this issue.

Many of the NAPLAN items are constructed around the syllable juncture, testing such issues as doubling and *e*-drop before adding affixes and doublets at the syllable juncture. For these items the NAPLAN misspellings have minimal differences from the correct spelling, e.g. *community* (comunity), *sufficient* (suficent), *swimming* (swiming). It appears that the misspelling of some of the target words in the set of unidentified error words helped students to spell those words, provided they could correctly identify them as the target words. This is because the NAPLAN pattern for constructing error patterns at the syllable juncture coincides with a common student strategy for handling syllable juncture doublets and *e*-drops, i.e. if it has one letter, double it (for *disappointed—disappointed* but also *dissapointed*); if has only one letter at the syllable juncture, put it in (for *million—million*), if it has an *e*, as in *hideing*[3], drop it. Thus, these items not only fail to give a true indication of spelling ability, they also reinforce inefficient, undeveloped strategies.

If proofreading items are to act as a proxy for the spelling construct, then genuine error patterns need to be used and we need to understand better what they do and how they work.

The construction of difficulty

Templeton's (1992) definition of word that is in the teachable slot is a word that students get some of the time and have wrong some of the time — a view that accords well with Rasch measurement. This means that students have sufficient orthographic knowledge to be able to learn a word with a reasonable amount of effort. How difficult items are constructed needs to be defined.

At first, it would seem that the use of the two formats — identified and unidentified word items should be part of this list. In all years, see Figures 7–10, students found the words used in the unidentified-word items more difficult than those used in identified-word items. However, in all but Year 5 where the words used in the unidentified words were significantly more difficult, the difference is not great. Given that no differentiation is made between the markings of two item-types, this would seem to be the most logical reason for including the both formats but this is not the case. While the Year 3 unidentified-word items are more difficult than the identified-word items, exactly the reverse is the case with the Year 7 items where identified-word items were more difficult than the unidentified-word items which were presented first in the test.

In NAPLAN, difficulty seems to have been constructed in three ways, i.e. by:

- choosing words outside a cohort's vocabulary or orthographic knowledge and experience
- constructing items with high readability levels
- using multiple errors.

Choosing difficult words

In 2008, words such as *special* (9%), *properly* (7%) and *oxygen* (3%) were used in Year 3 as difficult items. In Years 5, 7 and 9 only one item had similar facility rates — *disappointed* (8%), *equipped* (9%) and *satellite* (9%). In Years 3 and 5, item difficulty was achieved by using difficult target words requiring orthographic knowledge beyond the level of these students. Evidence that this was so is seen in the number of different error patterns the students sampled. In spelling these words as dictation, Year 3 students spelt *oxygen* with 259 different error patterns, *special* with 209 different error patterns and *millions* with 205

[3] **This misspelling was used as an identified word misspelling on the 2009 Year 7 Language conventions test. Some 84% of students correctly spelled the word, but most unusually for spelling the item had an infit of 1.33 and the Item Characteristic Curve shows the less able students to have been supported by the error pattern.**

different error patterns. The Year 5 students spelled *disappointed* with 103 error patterns while the Year 7 students spelled *equipped* with 76 different error patterns. However, Year 9 students made only 42 different error patterns in spelling *satellite*. These data show that the Year 3 words in particular are so difficult that they are not in the 'teachable slot'. Because there is no common correctly spelled elements considerable teaching effort will be needed for students to learn to spell these words. However, the Year 7 and 9 words are examples of words that are difficult but teachable. The error patterns for these words show that students do share common misunderstandings. The difficulty with *equipped* arises from the need to double the *p* at the syllable juncture. Just two errors account for more than half the students — *equipt* (30%) and *equiped* (23%). This is a genuinely difficult word for the cohort that is teachable. Similarly, *satellite* is genuinely difficult but there are two elements that make this word difficult — the unmarked closed first syllable and the unstressed second syllable which presents the most challenge. The error patterns that account for these challenges — *satelite* (21%), *satalite* (19%), *satilite* (9%) and *satelite* (8%) — again account for more than half of the students in the sample.

Constructing proofreading items that have the potential to show the acquisition of orthographic understanding and student growth need to be focused on the use of the identified critical elements that commonly challenge students at each of the tested year levels rather than randomly selecting words from outside the cohort's repertoire of spelling knowledge. When words beyond the orthographic knowledge of the targeted cohort are chosen, true to the observations of Moats (1995) and others, students regress to random strategies producing large numbers of errors with many different representations of pronunciation. Few, if any, errors approximate the correct spelling sequence. Random attempts tell us nothing about student knowledge and model an outdated understanding of spelling as knowledge of words rather than of a system.

Readability

Another way to construct difficult items is to accidentally include confounding factors — in the case of the spelling items, to confound the items with high readability. This occurred in both Year 3 items and Year 7.

In the first Year 3 unidentified word set, *Peter,* the readability levels as measured by the Fry readability formula was 12 years old and by the Flesch-Kincaid Grade level readability scale 6.7. For the second unidentified word set*, Cells,* the readability as measured by Fry was 11 years old, and on the Flesch-Kincaid Grade level readability 5.9. At Year 3 combination of reading difficulty, the flow of the test and some construction problems appears to contribute to item difficulty.

The case is perhaps clearer at Year 7 where some identified-word items have readability levels above the year level. The first and third units had Flesch-Kincaid Grade level readability of 11.9 and 11.1 respectively and Fry readability for the units was in excess of 16. In Year 7, and only at this year level, the unidentified-word errors were presented first in the testbook, an acknowledgment on the part of the test constructor that these items were easier than the identified-word ones. In dictation, where students are just asked to spell them, these Year 7 unidentified-error target words do indeed have higher facility than the identified ones. This change in the relative difficulty of the two NAPLAN item sets is a consequence of a particular combination of confounding factors. Here, these unidentified-error items have high-facility target words embedded in sentences that have significantly lower reading demands than other papers. In contrast, the identified word items used on the Year 7 test have lower facilities than those chosen for the unidentified.

Use of two errors

Another of the means of increasing the item difficulty is the use of two errors in the target-word. Because of the formulaic nature of the item construction, students are led by the flow of the test to expect one error — a missing letter, an added letter, and so on. But then some items have two errors. These items raise questions about how these items should be constructed and where they can be used. As was the case with s*atellite,* there are words where two elements cause students difficulty, there are others where students make one of two errors. For example, in *achievement*, Year 9 students either reverse the *ie* as presented in the item misspelling or they leave out the *e* following the *v* also included in the item misspelling, but not both. Similarly with *sufficient*, students appear to find difficulty with the double *ff* at the syllable juncture or *ci* = *sh,* but not both. Where this is the case, students appear not to find the unexpected error. We hypothesise that they find the error that they typically make but don't notice the other. This is the difference between proofreading one's own errors and proofreading someone else's, a teaching point.

Table 3: Year 9 multiple error items

Word N = 443	**NAPLAN ERROR**		**DICTATION ERROR**	
surgery (sergary)	sergery	71	surgury	19
	surgary	45	sergery	13
	sergury	16	surgary	8
	skipped	**10**	surgey	4
	surgury	9	sergury	4
	sergary	5	sergary	3
	sergarey	2	surgry	2
	surgarey	2	surgeory	2
achievement (acheivment)	achievment	130	achievment	48
	acheivement	31	acheivement	25
	acheivment	19	achivement	19
	achevement	10	acheivment	17
	achivment	7	achivment	6
	achivement	7	archievement	4
	skipped	**7**	achevement	3
sufficient (suficent)	sufficent	110	sufficent	30
	suficient	22	suficient	12
	skipped	17	sufficiant	7
	sufficient	13	suficiant	5
	surficent	9	suffiecent	5
	suficent	7	suffient	5
	surficient	6	sufficant	5
	sufficant	6	surfishent	3

Of concern here is the change in the error distribution and the number of students making errors they appear not to have been making before. For example, in dictation, only 30 students made the most common *sufficent* but on the NAPLAN measure 110 did. Similarly, with *achievement* only 48 students omitted the *e* but in NAPLAN 130 students did so. This is an avoidable confounding effect created by item design,

The unanswered questions here are:

- Are the NAPLAN items causing students to have difficulties they would not ordinarily have?

- When and how should item writers use multiple errors?

About the measure

In all year levels, more than 75% of students had more words correct when simply asked to spell dictated words. These comparative data are presented in Figures 3 to 6. Time and again, students misspelled words on the NAPLAN which they could write correctly on dictation. The graphs show such a difference in performance that it almost seems that different constructs are being measured. On face value, it seems the dictation task is a better test of orthographic knowledge. Certainly, dictation, as a measure of production knowledge, has fewer confounding variables than the receptive proofreading items. As already put forward, variables confounding the proofreading items include readability and aspects of item construction such as the selection of the misspelling cues.

Dictation allows students to focus all their cognitive resources on the activity of spelling a single word at a time. In addition, the activity becomes teacher-guided and paced, thus minimising the likelihood of a student omitting an item. It is notable that older students tended to omit the spelling items on the NAPLAN altogether, with omits among the highest occurring responses in Year 9. In contrast, omits are rare on the dictation measure.

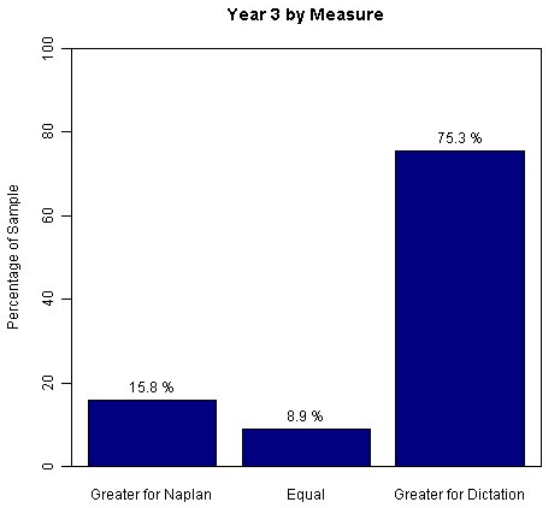

Figure 3: Year 3 results

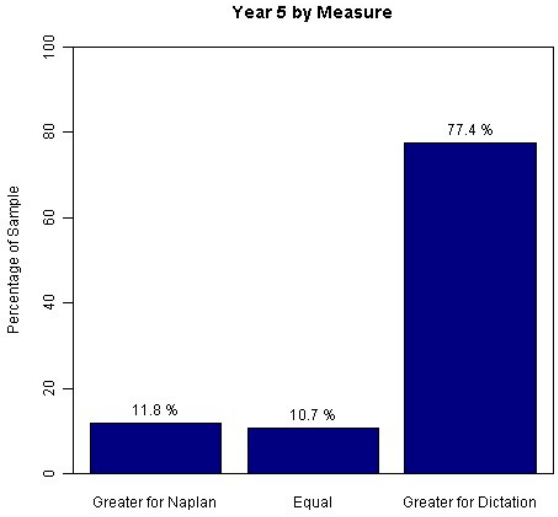

Figure 4: Year 5 results

The pattern of performance on dictation relative to proofreading in each of the year levels is very similar. The consistency of performance alone would suggest that it is testing the construct in the same way.

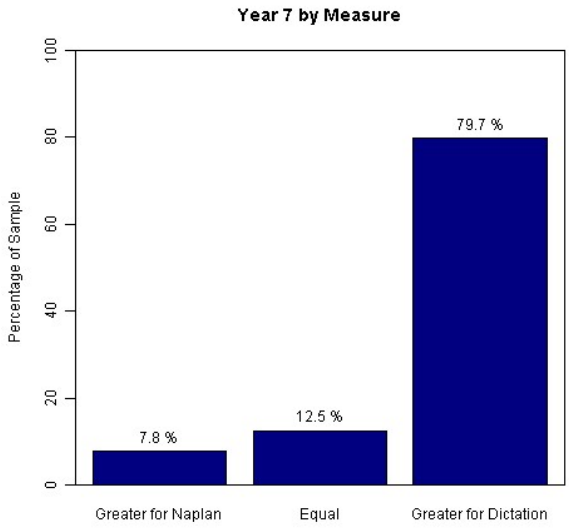

Figure 5: Year 7 results

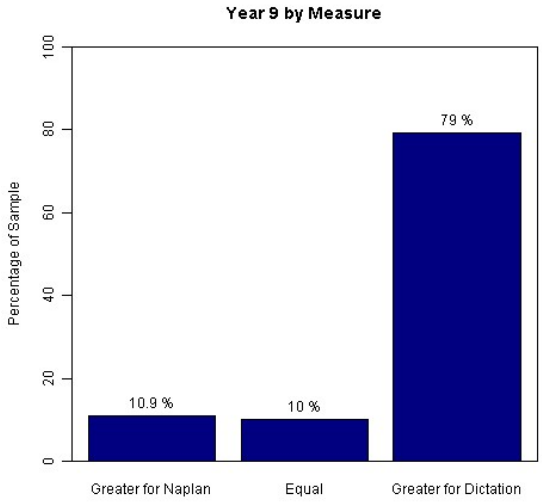

Figure 6: Year 9 results

What do the subsets of identified and unidentified items contribute to the measure?

The different student performances on the two types of proofreading item — identified-word and unidentified-word — are shown in Figures 7 to 10. They show that on the dictation measure, students found the word sets used in the identified-word item easier than the unidentified items. In Year 5 (Figure 8) the difference in performance between the identified and the unidentified-word items suggests that the latter were much harder as a dictation task. It also suggests that there was something about the construction of the proofreading items in which they were embedded that made them easier in that context. This difference in the construction of difficulty has implications for those jurisdictions that measure distance travelled, particularly so when considered in connection with the fact that in Year 7 the unidentified NAPLAN items were easier.

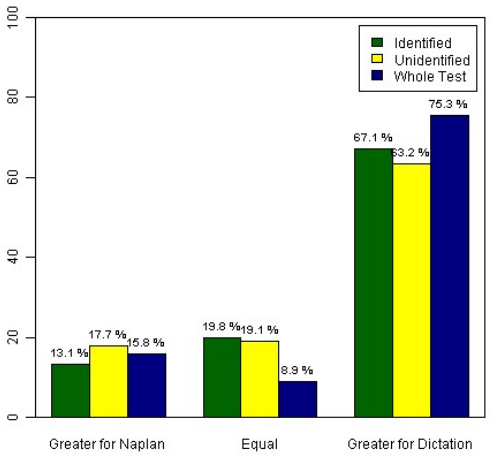

Figure 7: Year 3 results

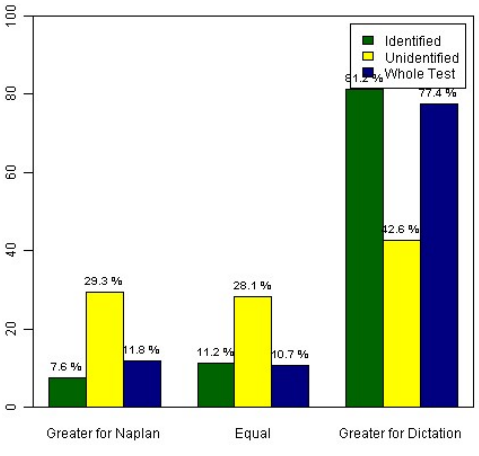

Figure 8 : Year 5 results

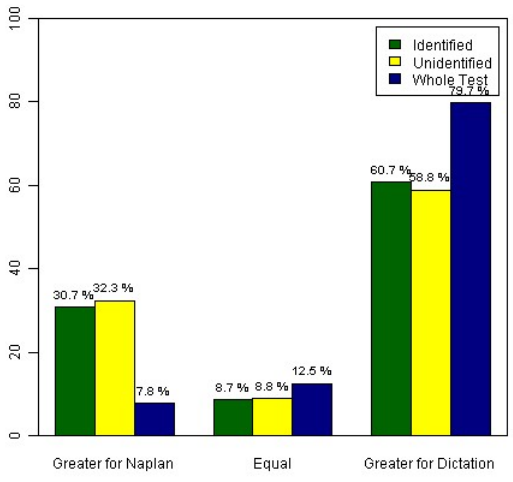

Figure 9: Year 7 results

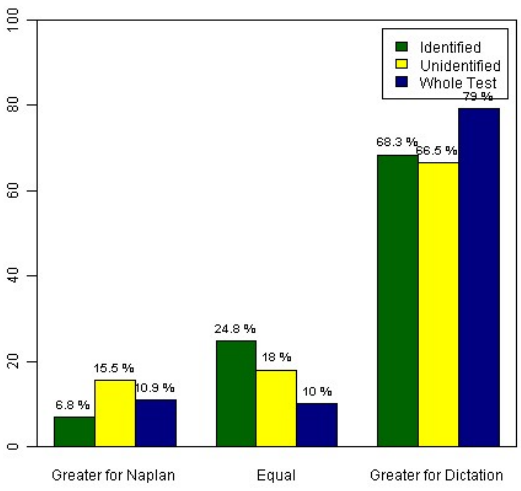

Figure 10: Year 9 results

Students should be expected to perform better on the identified-word items, simply because they know which word is being targeted and because more students attempt these items. Indeed, fewer students omit the identified-word items than the unidentified-word items on NAPLAN. It might therefore have been expected that more students would perform better on the NAPLAN identified-word items, simply because the task was a one-step problem with much of the spelling solution presented to them, e.g. change *frend* to *friends*. However, results suggest that more students were assisted by the format of the unidentified-word items. That is, *if they could identify the misspelt word*, the error construction helped some students to spell some words correctly. The lower readability of the Year 5 items together with the nature of the error patterns, e.g. *milions,* disapointed, *clime, taist, sinse, lizard* makes this the likely explanation for the Year 5 results.

About the words

As proofreading is about finding spelling errors, it seemed reasonable that the errors students made would provide critical insights into the relationship between dictation and proofreading. The errors made on both measures were compared. Some of these findings are shown in Tables 4–8 and a more comprehensive list is available in Appendix 2. Because of the small numbers sometimes involved, a count of students rather than percentage has been used.

In error patterns for the identified-word items where almost all students are able to spell the word, the constructed NAPLAN misspellings are most similar to the authentic student-generated error patterns. See for example *like* in Year 3, *swimming* in Year 5, *since* at Year 7 and *community* at Year 9. Because almost all students can spell these words there are fewer error patterns made.

However, words like *open*, *brown* or *cracked* generate quite different kinds and frequencies of error patterns. In an example such as *open*, the NAPLAN error is not common — only one student in 591 made this error in the dictation test. In responding to the NAPLAN item, students still tended to produce the common, authentic error *opin* but under the influence of the NAPLAN misspelling then produce error patterns that do not commonly occur in dictation. Students tend to modify the provided misspelling, e.g. by attaching final *-e*

(*opune*), changing the vowel (*opon*) or the sequence (*opnu*). Then there are cases where the students simply reproduce the provided misspelling. See Table 4.

Where the provided misspelling is the most common authentic error, not only do students tend to modify the provided misspelling, they also either reproduce the error or, faced with a word they believe to be correct, they begin to omit the item. This can be seen in the error patterns for the word *cracked* shown in Table 4. In dictation students find two elements of that word difficult — the */k/* and the *–ed*. Faced with a NAPLAN error featuring the element we know they found most challenging in dictation, the students responded by modifying the part they knew to be wrong by changing the *k* to *c* or they reproduced the common dictation error they were given, or they omitted the word.

Table 4: Frequency of error patterns for Year 3 identified items

WORD	NAPLAN ERROR		DICTATION ERROR	
like (lik)	lick	8	lick	6
	licke	5	licke	4
	lick	4	look	2
	lik	3	lik	2
	skipped	3		
open (opun)	opin	18	opin	14
	opune	10	opne	7
	opon	10	opine	4
	opne	9	onpe	3
	upon	8	oupn	3
	opun	7	opn	2
	opnu	6	opon	2
Brown (broun)	broune	14	broun	27
	bruon	14	bran	12
	bron	11	bron	9
	brone	10	brawn	8
	broun	9	broned	6
	brouwn	8	bronw	4
cracked (craked)	craced	34	craked	53
	craked	24	cract	22
	skipped	13	craced	14
	crakede	8	crackt	12
	creaked	7	crakt	11
	crakked	7	crat	11
special (speshal)	speshel	37	speshel	37
	speshal	34	specil	24
	speshall	19	speical	22
	spashal	17	speshal	14
	speshale	14	specail	11
	speashal	14	speshle	11

A further dimension to these response patterns can be seen in the most difficult Year 3 error-identified item — *special*. Here two of the most frequently occurring errors show the students close to mastery of that word's most difficult elements — the medial spelling of the *sh* = *ci* sound and the representation of the vowelised *l* (*al*). The two error patterns that

feature awareness of the pattern *sh* = *ci* are not present in the NAPLAN-generated errors. Instead, under the influence of the provided misspelling, which models very simple sound mapping strategies, the spelling of this blend is confirmed, that is *sh* instead of *ci.* Students consequently focus on spelling the other troublesome aspect of this word — choices of *le*, *el* or *al*. They also introduce errors previously not seen in the most common dictation error patterns, thus confirming the observations of Moats (1995), Morris (1992) and others about students' tendencies to regress to less-sophisticated spelling knowledge when they are presented with words that are beyond their current level of knowledge.

In a pattern similar to Year 3, the Year 5 students also reproduced or modified the provided error to produce a different and larger set of error patterns than they did on dictation, thus diluting the information available to teachers. For example, in dictation, misspellings of the word *completed* clustered around two error patterns, *compeated* (made by 56 students) and *compited* (made by 14 students). Errors from the NAPLAN item featuring this word show five error patterns — *compleated, completed, competed, compeated, compeated* — as frequently occurring. It is no longer clear what the teaching focus should be. Not only did students make different errors on this word, more students made more errors.

Even when the performance of our sample was very similar for both measures, as for example on the word *friend/s,* which had facility rates of 84.65% on the NAPLAN items and 85.41% on dictation, the error patterns for NAPLAN are no longer as grouped. Thus, what needs to be taught is no longer as clear. The dictation error patterns for *friend/s* show large numbers of students making only two errors, thus demonstrating that the word is in the 'teachable slot'. It is clear that teaching focused on one aspect of this word will overcome the last major problem to improve performance. This is useful information for teachers.

Table 5: Frequency of error patterns for Year 5 identified errors

WORD	NAPLAN ERROR		DICTATION ERROR	
swimming (swiming)	swiming	12	swiming	12
	simming	3	simming	3
	sweing	2	sweing	2
	siwmming	2	siwmming	2
	skipped	2	simwwing	1
number (numba)	nummber	11	nuber	4
	numbar	9	nummber	4
	nummba	7	naber	2
	numbe	2	nabumber	1
	numba	1	nomber	1
friends + friend (frends)	freinds	25	freinds	33
	firends	5	frends	19
	frendes	5	frens	3
	freands	5	frinds	3
	frends	4	friendes	2
	frands	3	friens	2

Just as in Year 3, some Year 5 items lead students to erroneously confirm spelling patterns or to introduce new errors. The Year 5 students' responses to *number* show the same patterns of modifying or reproducing the given error as well as introducing new forms of error. The error patterns for *number* show that although errors in spelling the final syllable were rarely made by Year 5 students in dictation, such errors were shaped by their response to the NAPLAN items because of the provided misspelling.

Yet again, the attempt to spell *swimming* in the NAPLAN shows the effect of the provided misspelling. In this case, the provided misspelling of *swimming* is identical to the most common genuine error, namely a failure to double at the syllable juncture. Testwiseness should have stopped the students from reproducing a given error as an answer, but it failed to do so. The image of the word written on the paper seems to prevent students from using their internal spelling knowledge.

Even some Year 9 students appear to be influenced by the NAPLAN error patterns. While slightly in excess of 95% of the Year 9 students were able to spell *community*, 42 of them simply reproduced the given error, an error they had not made in dictation. The dictation errors suggest that those few students who could not spell this word were having difficulty with the ending *–ty* and the vowel in the second syllable. They had control of the doublet at the syllable juncture. Control over this feature was also shown in the NAPLAN error pattern but now an added error, failure to produce the doublet appears.

Table 6: Frequency of error patterns for Year 9 identified errors

WORD	NAPLAN ERROR		DICTATION ERROR	
community (comunity)	comunity **skipped** communuty communty communitiy	42 5 4 4 1	communitee commnity communittee commity communitie	2 2 1 1 1
previously (previusly)	previosly previsly prevously **skipped** preveusly previesly prevesly	14 10 9 **8** 5 3 2	previosly prevesly prevously previsly preversley previesly preaviously	6 6 6 4 2 2 2
system (sistem)	**skipped** sestem *Jupiter* variants plannet sistum systerm	9 4 3 1 1 1	sistem sistym systum syste siztem systerm	1 1 1 1 1 1
evacuate (avacuate)	avacuate **skipped** *siren* variants advacuate avuate evacueate	19 16 31 2 2 1	evauate evaquate evacuwate evacute evacate ifacuwait	4 4 3 3 1 1

Similarly in spelling *evacuate,* Year 9 students included the error from the target word, an error not seen in the dictation. In Table 8, the error patterns for some of the easiest items is shown. What is evident is the increase in the number of students making errors but also that students tended to make different errors.

One of the telling features about the Year 9 NAPLAN performance is that students are more likely to omit items, even the very easiest of items. We suggest that this is because they have a better sense of the parts they typically get wrong and those that they rarely get wrong such as the *–ty* in *community*. When they are faced with an error such as that in *community*, they fail to notice the doublet error and are unable to identify what it is about the word they have to change. As a result they omit the item. This becomes even more problematic in the two-error items.

Comparison of error patterns on identified-word items

On all but three of the unidentified-word items used on the test, the top three error patterns for Year 3 students are either variants of a distracter or are omitted (See Table 7). Even for these three words, *present*, *properly* and *hoping*, omits and variants are still two of the top three error patterns. In other words, for most items we have little or no information about what students so or do not know about the spelling of the unidentified word items. We simply know that they had trouble finding the target words.

Table 7: Frequency of error patterns for Year 3 unidentified items

WORD	NAPLAN ERROR		DICTATION ERROR	
could (coud)	*know* variants	55	cood	38
	(new	16)	code	29
	after variants	18	coud	16
	skipped	14	cod	10
	coude	10	cold	7
	cloud	6	cord	6
animal (animel)	*baby variants*	23	anamal	14
	very variants	22	anamel	10
	skipped	19	animale	9
	animle	10	animel	9
	anamel	10	anamle	8
	animil	10	anamil	7
	anamal	8	anmle	6
oxygen (oxegen)	*carries* variants	116	oxegen	87
	blood variants	68	oxigen	49
	oxagen	41	oxgen	18
	oxigen	29	oxigin	18
	oxygen	26	oxegon	11
	oxgen	19	oxagen	9
	oxegan	18	oxigon	7

The tendency to select other distracters from the items decreased with age. Year 5 students were better able to find the target words than other students, though for all but three words, *properly*, *disappointed* and *fitness*, variants of another word were one of the top two error patterns. In Years 5 and 7, students selected still fewer distracter words but were more likely to omit items. In both year levels, one of the top five choices made by students was to omit the items.

As was the case with the identified items, the propensity for the item construction to influence student responses is still evident at all years. As the responses to *fitness* in Years 5 and 7 attest, the two error responses were particularly problematic. Instead of fewer students making the common errors, more do, possibly influenced by the fact that there are two errors in the given misspelling.

Table 8: Comparison of Year 5 and 7 error patterns.

WORD	NAPLAN ERROR		DICTATION ERROR	
fitness – Year 5 (fittnes)	fittness	109	fittness	81
	fitnes	107	fitnes	27
	exercise variants	99	fittnes	13
	improve variants	19	fitnis	5
	skipped	10	fiteness	4
	fittines	3	fitniss	2
fitness – Year 7 (fittnes)	fittness	100	fittness	73
	exercise variants	57	fitnes	8
	fitnes	31	fittnes	4
	skipped	4	fitnise	3
	fitnes	2	fiteness	1

Discussion

The national testing program is in its infancy. There are many lessons to be learned. The need to define the construct of spelling in an evidence-based framework is evident and it is urgent. Without it, the confounding factors we have encountered render the data at best problematic. Bond and Fox (2001:19) suggest that the assessment instrument used to measure a construct should be:

- sensitive to the ordered acquisition of skills or abilities
- capable of determining whether the general developmental patterns suggested are sufficient for defining and measuring achievement
- capable of showing development of the skills or the people tested.

We contend that the NAPLAN measures meets none of these requirements. Because items are developed to match a commonsense or traditional view of spelling they often shape the results rather than providing insights into the learning of the cohort or individual students.

The data produced from these items may be seriously misleading. For example, the item descriptor for *loudly* describes the item demand as *identifies an error and then spells a word where the incorrect letter pattern has been used to represent the ou/ow diphthong*. The data show that most Year 3 students identified *supporters* as the incorrectly spelt word. The most likely explanation for this is that it results from an item construction fault. *Supporters* is the longest word in the line *All our supporters were cheering loudly* … as well as being the first option. Year 3 students often believe they can't spell 'big words'. However, examination of the dictation error patterns shows that the suffix *–ly* caused students more difficulty in spelling *loudly* than the vowel pattern used as the unidentified error. On NAPLAN, students appear to be showing the same difficulties with this aspect of the word, but are also including the modelled error in their responses. This is a concern for two reasons, first because students are being influenced to produce a less correct error, and second because teachers may be influenced to misdirect their teaching focus — in this case to teach the *ou* rather than the *-ly.*

Table 9: Error patterns for *loudly*

WORD	NAPLAN ERROR		DICTATION ERROR	
loudly (lowdly)	*supporters* variants	163	loudley	31
	(suporters	44)	louldly	16
	skipped	48	lowdly	10
	yelling variants	47	lodly	10
	(yeling	21)	ladley	9
	lowdley	20	ladly	8
	louwdly	10	ladle	8
	where	10		

The unidentified-word items, if they are used, should be developed with distracters that are the same length and which have some plausible similarity to the target word. In contrast to the *loudly* example, in other examples the standout word is the key. These items might well have been constructed as identified items.

The question is, however, whether the unidentified word items, at least in their current form, should be included at all. Consistent with the requirement that an assessment instrument be sensitive to the ordered acquisition of skills or abilities, a valid use of this item form would be to measure student ability to undertake the two major steps in proofreading — find and correct. But these items are neither constructed nor scored to do this. The purpose for their inclusion seems obscure. We do not argue for the replacement of proofreading items. We do need to know more about the development of proofreading skills. But this must come from properly constructed items.

The construction of items to represent a traditional model of spelling means that the measure is unlikely to be able to meet the second requirement of an effective measure. That is, that it is capable of determining general developmental patterns sufficient for defining and measuring achievement. It is clear from the construction of the items that there is little idea of what aspects of spelling are challenging and which are not. Too many items are confounded by factors such as readability, poor construction, or even trickiness.

The item-construction practices that arise from this traditional approach, such as constructing error patterns at the letter level at every year level, produce adverse curriculum effects. Constructing items at the letter level conflicts with research that students must process words in larger chunks if they are to become better spellers (Bear, Templeton, et al 2008, 1998; Ehri and Rosenthal, 2007; Ganske, 2008, 2002, 1999). While the number of words featuring syllable juncture errors suggests that the item-writers have a sense of spelling as a system, there is no clear systematic exploration of the system. This failure to construct items that test the derivational and etymological aspects of the words adversely affects not only spelling but also vocabulary development.

The two measures, NAPLAN proofreading and dictation, perform differently, thus providing quite different information about spelling. The results demonstrate that students not only have higher facility rates on the dictation measure, but they produce errors that give insight into their *own* orthographic knowledge rather than provide information shaped by the measure itself. Because error patterns from NAPLAN are not generally available for teachers to judge how this is happening and what this means for their classrooms, it is imperative that whatever measure or measures are used, they report an authentic picture of student performance that can inform teaching and curriculum. We argue therefore for the inclusion of a dictation task to provide for a balance for the proofreading items. A well-constructed dictation task provides more authentic information about students' orthographic knowledge. Two major arguments have been made by the test constructors against the use of dictation passages. The first has been that dictation opens the door for cheating. Cheating is possible on any test and we have some evidence to show that the kind of cheating developers worry about — carefully stressed and enunciated pronunciation of the

words — is in fact counter-productive. It leads students into error rather than supports them.

The second argument against using dictation has been that dictation introduces the variable of a teacher's voice and pronunciation. The assumption that this is intrinsically bad seems to be based on perception rather than on hard evidence. Much of the orthographic system is about coding the sound and the pronunciation of words — the sounds and the cadence. This coding of pronunciation is seen in long and short vowels, soft and hard consonants, stressed and unstressed syllables. This is certainly the dimension of spelling that takes students most time to master. A wealth of research exists to help inform this aspect of learning to spell.

Given the better performance on the dictation measure it is, therefore, difficult to sustain the argument that the teacher variable disadvantages students. The gap may be explained by the relationship between the teacher and the class. Students are likely to be more sensitive to teacher expectation, such as the expectation that they use particular spelling strategies or persist to produce their best result, but there are other explanations.

It is more likely that hearing the word allows spellers with more developed orthographic knowledge to make the link from the articulated to the written form. Ehri's study (1984) of better and poorer spellers found that better spellers segmented words in a way suggested by their spellings where poor spellers produced spellings that reflected conflated pronunciations. Analysis of the dictation errors supports this finding. Where the words are within the 'teachable slot' for the age cohort, the divide between the error patterns that approximate the letter patterns of the correct spelling and those that record particular pronunciations is easily seen. It is more difficult to detect in NAPLAN errors which, shaped by the given error, tend to be representations of pronunciation. It seems, therefore, that having students hear the word is more likely to have a positive effect than a confounding influence. At the very least, dictation has fewer confounding effects than the current measures.

Data from whatever NAPLAN measures are used, whether dictation, proofreading or desirably both, would be enhanced by the collection and reporting of the error patterns for systems and schools to undertake a qualitative examination of the error patterns to inform optimum learning sequences for students[4] and to judge the quality of the testing program for themselves.

Conclusion

The development of a sound research-based foundation national curriculum will provide the basis from which a framework can be developed for the construction of test items. Good assessment is linked to good curriculum and testing is a form of assessment. Quality assessment approaches are focused on the quality of the task, the validity of the data, as well as the strategic and metacognitive knowledge. All assessment instruments are developed for defined purposes and their data used only within those parameters. NAPLAN tests can be developed to provide teachers with some useful information about how students acquire and use their orthographic knowledge, but this is possible only if the items are technically sound so that they do not provide misleading information and are framed to explore all the orthographic knowledge used as spelling.

[4] In 2009, student errors will be provided to schools.

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Appendix 1: Comparison of the sample students' performance with that of the state cohort

Year 3

WORD	STATE % NAPLAN	SAMPLE % NAPLAN	Sample % Dictation
like	90	89.97	96.22
open	73	75.66	89.80
brown	64	65.79	80.92
swimming	67	72.04	76.15
around	55	57.24	70.72
friend/s	54	59.05	60.36
cracked	48	51.15	57.07
great	38	42.43	59.54
barked (barking)	41	46.05	57.24
complained	26	31.09	21.71
wheel	37	44.90	64.14
helmet	40	41.45	51.15
seat	56	57.24	60.36
special	8	10.36	24.18
could	57	63.16	65.30
animal	40	44.08	60.20
present	46	51.64	54.77
little	64	68.26	83.88
millions	29	32.89	31.25
oxygen	3	4.28	14.14
properly	7	7.07	30.76
match	32	34.05	54.28

WORD	STATE % NAPLAN	SAMPLE % NAPLAN	Sample % Dictation
loudly	20	25.49	57.24
hoping	35	37.66	54.77
pour	11	13.16	35.86

Key	Shaded cells are unidentified items

Year 5

WORD	STATE % NAPLAN	SAMPLE % NAPLAN	Sample % Dictation
swimming	92	94.14	95.85
number	90	88.69	96.47
friend/s	81	84.65	85.41
great	78	83.84	92.01
competed	49	53.74	75.58
popular	46	56.57	73.43
vanilla	48	57.17	55.61
muscle	21	26.87	44.70
astronauts	17	27.47	34.25
opposite	18	24.24	38.40
shoulder	56	65.66	68.97
button	52	60.40	78.80
effect/s	32	40.61	60.52
volume	81	84.04	80.03
millions	74	77.98	78.79
oxygen	15	25.86	45.62
properly	30	38.38	54.07
since	62	62.63	81.57
lizard	57	66.87	79.57
climb	61	68.69	84.79
taste	56	66.26	82.18
version	41	48.89	67.74
marathon	37	43.64	74.19
fitness	36	39.39	71.74
disappointed	8	14.95	17.82

Year 7

WORD	STATE % NAPLAN	SAMPLE % NAPLAN	Sample % Dictation
since	85	84.18	91.35
lizard	80	82.22	88.09
taste	77	79.12	89.23
climb	80	82.06	90.05
version	72	78.79	82.54
consumed	73	78.79	81.24
marathon	68	69.82	84.18
fitness	61	61.01	80.26
description	58	60.20	66.39
poisonous	38	43.07	44.70
overwhelmed	35	43.39	53.02
antique	30	41.44	65.42
disappointed	27	33.12	32.79
announcement	18	20.07	40.95
community	68	71.13	81.40
equipped	9	10.60	20.88
previously	56	61.50	75.69
surgery	31	36.87	65.91
mischief	30	29.20	40.95
recognise/-ize	26	26.43	40.62
immediately	13	20.07	42.90
secluded	19	20.72	41.27
athletes	36	38.99	60.03
substantial	28	35.40	37.85
performance	61	63.46	77.00

Year 9

WORD	STATE % NAPLAN	SAMPLE % NAPLAN	Sample % Dictation
community	80	83.30	95.03
previously	74	80.36	86.23
surgery	49	49.59	56.66
achievement	32	32.25	45.37
sufficient	29	35.25	41.08
exotic	64	67.24	67.95
imagination	71	77.88	84.65
substantial	49	59.59	58.01
performance	79	88.26	91.65
system	91	93.00	97.74
consumed	83	87.58	88.26
evacuate	73	77.20	91.65
failure	72	77.88	88.49
recreational	63	71.78	86.46
overwhelmed	52	65.46	73.59
antique	48	48.76	82.17
applauded	32	37.25	68.62
recipients	35	42.21	44.24
vulnerable	25	35.89	41.76
announcement	29	37.25	61.63
negligence	15	18.74	26.19
satellite	5	7.00	18.51
camouflage	10	11.51	20.77
faint	50	56.21	70.20*
government	74	81.72	90.97

* only *faint* has been scored correct: the figure will inflate with the inclusion of *feint – 85.4%*

Appendix 2: Error patterns on NAPLAN and dictation items

Year 3: Error identified

WORD	NAPLAN ERROR		DICTATION ERROR	
like	lick	8	lick	6
(lik)	licke	5	licke	4
	lick	4	look	2
	lik	3	lik	2
	skipped	3	likee	1
	litk	1	lile	1
open	opin	18	opin	14
(opun)	opune	10	opne	7
	opon	10	opine	4
	opne	9	onpe	3
	upon	8	oupn	3
	opun	7	opn	2
	opnu	6	Opein	2
Brown	broune	14	broun	27
(broun)	bruon	14	bran	12
	bron	11	bron	9
	brone	10	brawn	8
	broun	9	broned	6
	brouwn	8	bronw	4
swimming	swiming	15	swiming	70
(swiming)	sweming	13	simming	14
	swming	10	siming	6
	swimeing	6	swemming	4
	swing	4	swmming	4
	swiminge	3	siwmming	3
around	arowned	15	arand	21
(arownd)	arond	14	arond	15
	aroud	14	arownd	15

WORD	NAPLAN ERROR		DICTATION ERROR	
	arawnd	14	aroud	11
	arand	10	arund	8
	arund	9	orond	5
friends (frends)	freinds	43	freinds	42
	frinds	22	frends	40
	frends	19	friend	22
	frens	12	frinds	22
	frendes	9	frens	8
	frenids	6	frendes	6
cracked (craked)	craced	34	craked	53
	craked	24	cract	22
	skipped	13	craced	14
	crakede	8	crackt	12
	creaked	7	crakt	11
	crakked	7	crat	11
great (grate)	grat	71	grate	107
	graet	47	grat	54
	grate	39	graet	25
	greate	22	gat	7
	graite	14	greate	4
	skipped	13	grant	4
barked + barking (barkt)	barket	35	barcked	53
	barckt	28	baked	10
	barcked	28	barkt	9
	bark	20	backed	8
	barkt	10	barct	6
	skipped	9	braked	6
complained (cumplained)	complaned	34	complaned	98
	cumplaned	32	compland	90
	skipped	28	complaind	24
	cumplained	18	conpland	13

WORD	NAPLAN ERROR		DICTATION ERROR	
	complaind	15	copland	8
	comeplained	12	compained	7
	cumpland	11	complande	7
wheel	weal	98	weel	92
(weel)	weel	32	well	10
	well	19	wheele	7
	weele	18	wile	6
	wele	18	welle	6
	weels	11	wel	6
	weell	10	weell	5
helmet	hellmat	37	hellmet	34
(helmat)	helmit	28	helment	26
	hellmet	25	helmit	16
	helmate	23	helmat	14
	helment	20	hemet	11
	helmat	14	helmate	10
	skipped	9	halmet	9
seat	set	78	seet	84
(seet)	seet	21	set	63
	sete	17	sit	29
	seete	15	sete	9
	skipped	11	site	8
	sett	8	sat	4
special	speshel	37	speshel	37
(speshal)	speshal	34	specil	24
	speshall	19	speical	22
	spashal	17	speshal	14
	speshale	14	specail	11
	speashal	14	speshle	11

Year 3: Word unidentified

WORD	NAPLAN ERROR		DICTATION ERROR	
could	*know* variants	55	cood	38
(coud)	(new	16)	code	29
	after variants	18	coud	16
	skipped	14	cod	10
	coude	10	cold	7
	cloud	6	cord	6
animal	*baby* variants	23	anamal	14
(animel)	*very* variants	22	anamel	10
	skipped	19	animale	9
	animle	10	animel	9
	anamel	10	anamle	8
	animil	10	anamil	7
	anamal	8	anmle	6
	animele	7	anmle	6
present	**skipped**	23	presint	28
(prescent)	*birthday* variants	20	presant	26
	presint	21	presnt	20
	pressent	13	preasent	12
	presnt	11	pesent	9
	precent	11	prest	7
little	*Fluffy* variants	38	litte	18
(litle)	(fluffy	21)	littel	10
	cute variants	35	litle	6
	skipped	19	littil	6
	littell	9	littl	4
	litlle	8	littol	3
	litte	3	lettle	3
millions	**skipped**	36	millons	64
(milions)	*tiny* varients	40	milions	21
	body variants	35	millyens	11

WORD	NAPLAN ERROR		DICTATION ERROR	
	milons	26	melens	10
	millons	21	milens	10
	milions	16	milyins	9
	mileons	15	millins	9
oxygen	*carries* variants	116	oxegen	87
(oxegen)	*blood* variants	68	oxigen	49
	oxagen	41	oxgen	18
	oxigen	29	oxigin	18
	oxgen	19	oxegon	11
	oxegan	18	oxagen	9
	oxegen	18	oxigon	7
	oxegon	18	oxegin	6
properly	proply	98	proply	75
(propley)	*working* variants	46	propely	38
	skipped	44	propley	37
	propely	35	prople	31
	propley	29	propaly	24
	proppley	21	propoly	22
	prople	16	propily	11
	properley	15	propaley	6
match	**skipped**	51	mach	201
(mach)	mache	40	mache	11
	mach	23	macth	7
	march	20	mack	6
	football	13	march	5
	maech	13	macht	4
	much	11	math	3
loudly	**skipped**	48	loudley	31
(lowdly)	*supporters* variants (suporters	163 44)	louldly	16
			lowdly	10
	yelling variants (yeling	47 21)	lodly	10
			ladley	9
	lowdley	20	ladly	8

WORD	NAPLAN ERROR		DICTATION ERROR	
	louwdly	10	ladle	8
	where	10	londly	7
	lowdly	8	loundly	6
	louldly	5	lawdle	5
hoping	hopeing	59	hopeing	111
(hopping)	**skipped**	55	hopping	108
	team variants	48	howping	5
	(teem	18)	houping	5
	would variants	40	hopen	5
	hopping	16	hoppeing	4
	wine	15	hooping	4
	hoppeing	15	hoppy	2
	hoepping	6	hoppen	1
	helping	4	homing	1
pour	**skipped**	63	pore	138
(pore)	por	56	poor	77
	before variants	40	por	40
	(befor	21)	paw	15
	started variants	40	powr	6
	poor	31	pure	5
	pore	23	poar	4
	poure	18	powe	4
	pare	14	pare	4
	pure	12	pall	3

Year 5: Error Identified

WORD	NAPLAN ERROR		DICTATION ERROR	
swimming	swiming	*12*	swiming	12
(swiming)	simming	*3*	simming	3
	sweing	*2*	sweing	2
	siwmming	*2*	siwmming	2
	skipped	*2*	simwwing	1
number	nummber	11	nuber	4
(numba)	numbar	9	nummber	4
	nummba	7	naber	2
	numbe	2	nabumber	1
	numba	1	nomber	1
friends + friend	freinds	25	freinds	33
frends	firends	5	frends	19
	frendes	5	friend	8
	freands	5	frens	3
	friends	4	frinds	3
	frends	4	friendes	2
great	greate	14	grate	28
grate	grat	11	grat	8
	grate	11	graet	4
	graet	9	girte	1
	graete	5	gat	1
	gratte	3	geat	1
competed	compleated	37	compeated	56
compeated	completed	34	compited	14
	compeeted	31	competted	7
	compeated	31	competied	5
	compaeted	12	completed	4
	commpeated	9	compieted	3
	comppeated	9	compeeted	2
popular	populer	85	populer	26

WORD	NAPLAN ERROR		DICTATION ERROR	
populor	populur	15	popula	15
	populour	12	populor	9
	poppular	8	populur	8
	popluor	7	populare	7
	poppulor	7	pouplare	6
	populor	6	popler	5
vanilla	vannila	30	vanila	94
vanila	vinila	26	vinilla	20
	vanila	23	vinila	17
	vanilar	19	vanilar	11
	vaniler	19	vannila	9
	vanlia	15	vinilar	8
	vanilia	14	vaniler	5
muscle	mucsel	52	musle	60
mussel	muscell	45	muscel	37
	musel	38	musel	28
	mussel	25	mucle	26
	mucel	24	mussle	15
	muscal	22	mussel	13
	muscel	20	musal	12
astronauts	astronorts	149	astronorts	97
astronots	astronouts	32	astronaughts	37
	astronaughts	26	astronots	23
	astronotes	15	astronouts	21
	astranots	13	astranauts	9
	astronuts	11	astronaut	8
opposite	oposite	126	oppisite	79
oposite	opisit	53	oposite	58
	opposit	26	opisite	39
	opasit	26	opisit	15
	oppisite	20	oppsite	11
	opisite	16	opersite	9

WORD	NAPLAN ERROR		DICTATION ERROR	
shoulder	sholder	38	sholder	117
(sholder)	shollder	31	shoder	8
	sholdar	21	shouder	7
	skipped	11	soulder	4
	shoder	9	soder	4
	shulder	8	solder	4
	sholdre	5	shouldar	4
button	buten	53	butten	49
(butten)	botten	51	botton	18
	botton	20	buton	11
	butten	17	buten	9
	buttern	13	botten	5
	batten	8	buttin	4
	skipped	6	buttern	4
effects	efeks	49	efects	74
(effects)	effecks	48	affects	17
	efects	47	effect	11
	effecs	31	efex	10
	efecks	26	effets	9
	effets	11	efecs	7
	skipped	11	**skipped**	3
volume	vollum	13	volum	18
(vollume)	vollume	12	vollume	18
	voulume	5	vollum	7
	voloume	4	voulume	6
	vollumme	3	voloum	5
	vollmue	3	**skipped**	4

Year 5: Error Unidentified

WORD	NAPLAN ERROR		DICTATION ERROR	
millions	millons	28	millons	70
(milions)	*tiny* variants	17	milions	9
	milons	7	millones	5
	million	6	millins	4
	milions	5	milleons	4
	milinos	3	millyons	4
	mileons	3	milonses	3
oxygen	oxagen	85	oxegen	96
(oxegen)	*carries* variant 2	71	oxigen	21
	(caries	50)	oxegon	17
	oxogen	49	oxogen	16
	oxegon	36	oxagen	14
	oxigen	27	oxeygen	9
	oxegan	26	oxigon	8
properly	propely	63	propely	47
(propley)	proply	57	propaly	31
	properley	31	propoly	24
	propley	21	propley	20
	propoley	17	proply	16
	proppley	12	properley	8
since	*raining* variants	90	scince	18
(sinse)	(raining)	66)	sinse	15
	sines	16	sins	12
	sense	11	sence	9
	sinse	9	sines	6
	raning	7	sints	4
	cinse	7	scence	3
lizard	*members* variants	37	lizerd	25
(lizerd)	lizzerd	20	lizzard	24
	lized	10	lized	13

WORD	NAPLAN ERROR		DICTATION ERROR	
	lizered	9	lizzed	8
	lizerd	9	lizid	4
	lizred	7		
	skipped	6		
	meny	5		
	their	5		
climb	*mountains* variants	64	clime	48
(clime)	clim	21	clim	11
	climbe	19	climbe	5
	skipped	12	clame	4
	climed	4	climd	3
	cliame	4	clam	2
taste	tast	69	tast	50
(taiste)	*strawberries* variants	41	tate	12
	taiste	15	taist	8
	skipped	11	teast	7
	taest	6	taest	4
	taset	6	testas	3
	taist	6	tasted	3
	taiest	5	taset	3
	tasit	4	tast	2
version	vertion	51	vertion	30
(vershion)	vershon	30	vershon	13
	heard variants	17	vershion	13
	(herd}	9)	verson	9
	vershion	15	verion	8
	different variants	15	vershen	8
	vershtion	13	virsion	6
	verion	11	verstion	5
	verstion	11	virgin	5
marathon	marothon	167	marothon	36
(marothon)	*Training* variants (training)	46 32)	marthon	17
			marithon	13

WORD	NAPLAN ERROR		DICTATION ERROR	
	marothen	11	marrathon	9
	skipped	10	mathon	5
	marthon	6	maration	4
	marathan	5	marethon	4
	marithon	5	marathone	3
fitness	fittness	109	fittness	81
(fitness)	fitnes	107	fitnes	27
	exercise variants	99	fittnes	13
	(exersize)	26	fitnis	5
	exersise	18)	fiteness	4
	improve variants	19	fitniss	2
	skipped	10	fitnese	2
	fittines	3	fittnis	2
disappointed	dissapointed	120	dissapointed	126
(disapointed)	disapointed	70	disappointed	116
	diserpointed	32	disaponted	23
	skipped	31	disopointed	14
	disopointed	25	disapionted	10
	disipointed	22	diserpointed	9
	dispointed	20	disserpointed	8

Year 7: Word identified

WORD	NAPLAN ERROR		DICTATION ERROR	
community	community	53	comunity	24
(community)	communuty	21	commuity	6
	communty	13	comunaty	5
	skipped	5	communite	4
	comunety	4	comunite	3
equipped	equiped	141	equiped	141
(equipted)	equipt	94	equipped	128
	equipted	57	equipted	42
	equippted	31	equip	14
	equiptted	23	equited	6
	skipped	16	equipte	5
previously	previosly	31		
(previusly)	previsly	23		
	prevously	13		
	skipped	11		
	preveusly	9		
	preveously	7		
	prevesly	6		
	previesly	6		
surgery	sergery	145	sergery	32
(sergary)	surgary	40	surgury	24
	sergury	20	surgary	18
	sergary	20	sergury	11
	surgury	11	sergary	10
	skipped	**11**	sugery	6
	serggary	5	surgurey	4
mischief	mischeif	87	mischeif	87
(misscheif)	mischef	19	mischef	19
	misscheif	14	misscheif	14
	mischif	13	mischif	13
	misschief	11	misschief	11

WORD	NAPLAN ERROR		DICTATION ERROR	
	mischife	9	mischife	9
	skipped	7	**skipped**	7
	mistchief	6	mistchief	6
recognise –ize	reconise	163	reconise	79
(recanise)	recanise	24	reconised	20
	recenise	20	recognised	17
	skipped	14	reconized	17
	recinise	9	recignise	10
	recanse	7	reckonise	6
	recanised	7	recodnise	5
	recignise	7	regonise	4
immediately	immediatly	129	immediatly	53
(imediatley)	immediatley	55	immedietly	18
	imediatly	31	immeditly	9
	immediately	17	immediatley	9
	imedietly	14	imediately	9
	imediantly	12	emediatly	6
	immediantly	11	emedietly	5
	skipped	10	immediantly	5
secluded	sucluded	52	sucluded	74
(sicluded)	**Skipped**	43	sicluded	28
	sicluded	40	surcluded	19
	siclueded	29	succluded	16
	secured	25	sercluded	15
	cicluded	21	sacluded	9
	siccluded	15	cecluded	8
	sickluded	13	**Skipped**	**7**
	sacluded	12	socluded	6
athletes	athlets	79	athlets	62
(athleats)	athleets	40	athleats	38
	athleats	22	atheletes	25
	atheletes	22	athelets	6

WORD	NAPLAN ERROR		DICTATION ERROR	
	skipped	18	**Skipped**	4
	athaleats	17	athleates	4
	athleates	17	athleets	4
	athelets	12	athlits	3
	atheleats	10	athliets	3
substantial (substaintal)	substantal	49	substancial	66
	substancial	25	substansial	17
	substainal	22	substantual	16
	substaintial	20	substancal	10
	skipped	12	substanchal	9
	substaintual	9	substansal	9
	substanial	9	substanshal	9
	substantual	9	substancual	8
	substaintel	8	substantional	7
performance (performence)	performence	23	performence	29
	performense	14	peformance	8
	performance	13	performents	7
	preformance	12	proformance	6
	peformance	11	perfomance	4
	skipped	10	**skipped**	3
	preformence	9	preformance	3
	perfomance	8	performans	3
	proformance	7	performace	3

Year 7: Error Unidentified

WORD	NAPLAN ERROR		DICTATION ERROR	
since	rainning	16	scince	5
(sinse)	sines	9	sence	4
	sence	8	sinse	4
	skipped	**6**	seens	3
	sinse	5	sinces	2
	sense	4	sins	2
	scince	2	sience	2
lizard	lizzard	17	lizzard	29
(lizerd)	lizzerd	7	lizerd	7
	skipped	**7**	lisard	3
	their variants	5	lizide	2
	lizerd	6	lizzed	2
	lizeard	6	lisized	1
taste	tast	33	tast	30
(taist)	taiste	14	tate	11
	strawberries variants	8	taset	2
	teast	5	taiste	2
	taest	5	taest	2
	skipped	**5**	taist	2
	tiast	3	tarest	1
climb	*mountains* variants	26	clime	26
(clime)	**skipped**	**12**	climb	6
	climbe	10	climbe	5
	clim	5	clim	4
	I	5	clumb	2
	I'd variants	2	cllimb	1
	climed	2	clam	1
	clime	2	clibme	1
version	vertion	16	virsion	15
(vershion)	vershon	13	verson	13

WORD	NAPLAN ERROR		DICTATION ERROR	
	heard variants	6	vertion	7
	skipped	**8**	verion	6
	verstion	7	vershion	4
	different variants	7	verison	3
	vershion	5	verision	3
	vesion	3	virgin	3
consumed	*guest* variants	27	comsumed	17
(consummed)	**skipped**	12	consummed	10
	consumned	10	conshumed	5
	consummed	7	consume	4
	conshummed	6	consuemed	4
	consommed	5	cosummed	3
	conssumed	5	consumd	3
	comsumed	4		
marathon	marothon	89	marothon	17
(marothan)	marthon	7	marthon	9
	marathan	6	marrathon	7
	skipped	5	marithon	5
	Training variants	4	maraton	4
	marrathon	3	marathone	3
	maruthon	3	marethon	3
fitness	fittness	100	fittness	73
(fittnes)	*Exercise* variants	57	fitnes	8
	fitnes	31	fittnes	4
	skipped	4	fitnise	3
			fiteness	1
description	discription	72	discription	97
(descripshun)	descripsion	37	desciption	7
	descripshon	9	descripsion	6
	descripshion	9	desription	5
	skipped	7	describtion	5
	Perfect variants	7	description	3
	desciption	5	discreption	2

WORD	NAPLAN ERROR		DICTATION ERROR	
poisonous	poisones	37	poisoness	52
(poisonus)	poisonis	31	poiseness	21
	poisoness	26	poisonus	21
	poisonious	14	poisinous	16
	poisinous	11	poisenous	14
	poisonos	10	poisones	13
overwhelmed	overwellmed	94	overwelmed	131
(overwelmed)	overwelmed	33	overwellmed	30
	overwelmmed	21	overwelmd	8
	skipped	16	overwelled	6
	amount variants	16	overwhemed	5
	overwealmed	13	overwhelm	4
	overwelmd	13	overwhelmd	4
antique	anteek	75	antic	25
(anteak)	*valuable* variants	(48)	anteak	11
	anteack	25	antick	10
	anteake	24	anteck	9
	valuble	21	anteque	8
	anteke	16	antice	6
	skipped	13	antec	5
	anteck	11	antigue	5
disappointed	dissapointed	189	disapointed	165
(disapointed)	disapointed	30	dissapointed	134
	disopointed	17	dissappointed	15
	skipped	16	disaponted	5
	dissappointed	12	disaponited	4
	disepointed	12	diserpointed	3
	disipointed	12	desapointed	3
	Where variants	10	disipointed	3
announcement	anouncement	187	anouncement	78
(anouncment)	announcment	87	annoucement	41
	anounsment	28	announcment	33

WORD	NAPLAN ERROR		DICTATION ERROR	
	anouncment	21	anouncment	19
	anoucement	16	annoucment	18
	skipped	11	anousment	14
	radio variants	10	anoucement	12

Year 9: Error identified

Word N = 443	NAPLAN ERROR		DICTATION ERROR	
community	comunity	42	communitee	2
(comunity)	**skipped**	**5**	commnity	2
	communuty	4	communittee	1
	communty	4	commity	1
	community	3	communitie	1
	communitiy	1	cnmutid	1
previously	previosly	14	previosly	6
(previusly)	previsly	10	prevesly	6
	prevously	9	prevously	6
	skipped	**8**	previsly	4
	preveusly	5	preversley	2
	previesly	3	previesly	2
	prevesly	2	preaviously	2
surgery	sergery	71	surgury	19
(sergary)	surgary	45	sergery	13
	sergury	16	surgary	8
	skipped	**10**	surgey	4
	surgury	9	sergury	4
	sergary	5	sergary	3
	sergarey	2	surgry	2
	surgarey	2	surgeory	2
achievement	achievment	130	achievment	48
(acheivment)	acheivement	31	acheivement	25
	acheivment	19	achivement	19
	achevement	10	acheivment	17
	achivment	7	achivment	6
	achivement	7	archievement	4
	skipped	**7**	achevement	3
sufficient	sufficent	110	sufficent	30
(suficent)	suficient	22	suficient	12

Word N = 443	NAPLAN ERROR		DICTATION ERROR	
	skipped	17	sufficiant	7
	sufficient	13	suficiant	5
	surficent	9	suffiecent	5
	suficent	7	suffient	5
	surficient	6	sufficant	5
	sufficant	6	surfishent	3
exotic	excotic	33	excotic	10
(exsotic)	exsotic	17	exoitic	6
	skipped	17	egsotic	5
	exzotic	7	exsotic	5
	egsotic	5	egzotic	4
	excsotic	3	agsotic	2
	exsottic	3	exioic	2
imagination	imaganation	24	immagination	16
(imaganation)	immagination	16	imagenation	8
	skipped	9	imaganation	4
	imagenation	8	emagination	4
	imagnation	5	imagernation	3
	imagination	3	imagnation	2
	immigration	2	amagination	2
substantial	substantal	29	substancial	68
(substaintal)	substancial	19	substantual	13
	skipped	12	substantal	4
	substansial	9	substatial	4
	substainal	9	substaintial	3
	substansal	8	substancual	3
	substaintial	8	substansual	3
performance	performance	12	preformance	6
(performence)	**skipped**	9	performents	4
	preformance	8	performence	3
	peformance	3	proformance	3
	preformence	2	preformence	2

Word N = 443	NAPLAN ERROR		DICTATION ERROR	
	perfomance	1	peformance	2
	performents	1	perfrmance	1

Year 9: Error unidentified

WORD N = 443	NAPLAN ERROR		DICTATION ERROR	
system (sistem)	**skipped**	9	sistem	1
	sestem	4	sistym	1
	Jupiter variants	3	systum	1
	plannet	1	syste	1
	sistum	1	siztem	1
	systerm	1	systerm	1
	sistem	1		
consumed (consummed)	**skipped**	13	comsumed	10
	consumned	8	consummed	8
	consummed	5	consumend	4
	consommed	2	concumed	3
	conshummed	2	consumned	2
	guests variants	2	conshumed	2
evacuate (avacuate)	avacuate	19	evauate	4
	skipped	16	evaquate	4
	siren variants	31	evacuwate	3
	advacuate	2	evacute	3
	avuate	2	evacate	1
	evacueate	1	ifacuwait	1
failure (falure)	*unfortunately* variants	46	failer	14
	skipped	16	failier	9
	faliure	11	faliure	5
	fallure	2	failour	3
	faluare	2	failuar	2
	failiure	1	failiure	2
	falure	1		
recreational (recreasional)	**skipped**	26	recriational	11
	recreasional	21	recrational	5
	environment variants	20	recerational	2
	(enviroment	17)	reacreational	2
	recresional	6		

WORD N = 443	NAPLAN ERROR		DICTATION ERROR	
	recreasonal	4	recretional	1
	recreacional	4	recreation	1
	recreastional	2	recqreasional	1
	recreassional	2		
	recriational	2		
overwhelmed	overwellmed	41	overwelmed	55
(overwelmed)	**skipped**	20	overwellmed	9
	overwelmed	18	overwealmed	8
	overwealmed	12	overwhealmed	3
	overwelmd	9	overwhelemed	2
	overwelmmed	7	overwelmd	2
	ammount	4	overwehlmed	2
antique	anteek	39	antic	11
(anteek)	antic	17	antice	7
	skipped	18	anteak	3
	anteack	14	antick	3
	antick	9	anteque	3
	anteck	8	entic	2
applauded	aplauded	68	applorded	23
(aplorded)	applorded	58	aplauded	19
	skipped	21	appluaded	10
	aplorded	14	aplorded	9
	aplored	9	appluded	9
	appluaded	7	aplouded	4
recipients	**skipped**	31	recipiants	95
(recipiants)	*trophies* variants (trophys	25 11)	recipents	15
	recipants	23	resipiants	8
	recipitants	22	recipeants	6
	recipiants	18	resipients	6
	recipeants	17	recipants	6
			receipients	5

WORD N = 443	NAPLAN ERROR		DICTATION ERROR	
	recepiants	13		
	receipiants	12		
vulnerable	vonerable	44	vunerable	39
(vunerable)	**skipped**	32	vonerable	23
	vunrable	25	volnerable	16
	preditors	20	vonrable	14
	vunerable	19	vunrable	14
	predators variants	18	volnurable	8
	vunarable	11	vaulnerable	6
	vunurable	8		
announcement	anouncement	125	anouncement	51
(anouncment)	announcment	63	announcment	23
	skipped	20	annoucement	17
	annoucment	9	anouncment	15
	annoucement	9	annoucment	6
	anoucment	6	anoucement	4
	anounsment	5	annocement	3
	anouncment	5		
negligence	neglegance	117	neglegence	121
(neglegence)	**skipped**	**36**	neglegance	38
	neglagence	55	neglagence	26
	neglegence	30	negligance	25
	neglectance	19	neglegents	23
	neglectence	8	negligents	17
			neglagance	3
satellite	satelite	140	satelite	93
(satalite)	satilite	74	satalite	82
	satalight	45	satilite	44
	sattelite	26	sattelite	34
	skipped	23	satalight	19
	satalite	15	satillite	9
	satallite	13	saterlight	9

WORD N = 443	NAPLAN ERROR		DICTATION ERROR	
camouflage (camiflarge)	camoflage camoflarge camoflauge camaflarge camiflage **skipped**	66 66 37 33 25 19	camoflage camoflauge camoflague camoflarge camaflage camoflouge	101 78 32 25 8 6
faint + feint (feignt)	*correspondence* variants **skipped** fient fiegnt feighnt feignt	54 40 13 15 11 8	feignt fient fant fante feighnt fiant	11 10 8 3 3 1
government (goverment)	*responsible* variants *various* variants goverment *funding* variants *services* variants govnment govurnment govemment govornment	16 9 6 5 3 2 1 1 1	goverment goevrnment govement govoment govournment govrnement gurerment conerment	20 2 2 1 1 1 1 1

Appendix 3: Number of error patterns

Year 3: Error identified

WORD	NAPLAN	DICTATION

	% correct	# Error patterns	% correct	# Error patterns
like (lik)	89.97%	16	96.22%	12
open (opun)	75.66%	44	89.80%	32
Brown (broun)	65.79%	69	80.92%	47
swimming (swiming)	72.04%	60	76.15%	44
around (arownd)	57.24%	86	70.72%	80
friends (frends)	59.05%	77	60.36%	79
cracked (craked)	51.15%	108	57.07%	90
great (grate)	42.43%	76	59.54%	40
barked + barking (barkt)	46.05%	98	57.24%	114
complained (cumplained)	31.09%	192	21.71%	162
wheel (weel)	44.90%	68	64.14%	64
helmet (helmat)	41.45%	101	51.15%	112
seat (seet)	57.24%	50	60.36%	36
special	10.36%	206	24.18%	208

WORD	NAPLAN		DICTATION	
	% correct	# Error patterns	% correct	# Error patterns
(speshal)				

Year 3: Word unidentified

WORD	NAPLAN		DICTATION	
	% correct	# Error patterns	% correct	# Error patterns
could (coud)	63.16%	95	65.30%	78
animal (animel)	44.08%	145	60.20%	136
present (prescent)	51.64%	128	54.77%	113
little (litle)	68.26%	77	83.88%	43
millions (milions)	32.89%	162	31.25%	205
oxygen (oxegen)	4.28%	143	14.14%	257
properly (propley)	7.07%	143	30.76%	136
match (mach)	34.05%	109	54.28%	43
loudly (lowdly)	25.49%	181	57.24%	129
hoping (hopping)	37.66%	104	54.77%	37
pour (pore)	13.16%	148	35.86%	85

Year 5: Error Identified

WORD	NAPLAN ERROR		DICTATION ERROR	
	% correct	# Errors	% correct	# Errors
swimming (swimming)	94.14%	15	95.35%	11
number (numba)	88.69%	22	96.16%	15
friends + friend (frends)	84.65%	25	84.24%	31
(great (grate)	83.84%	29	90.10%	14
competed (compeated)	53.74%	78	73.54%	65
popular (populor)	56.57%	85	71.52%	89
vanilla (vanila)	57.17%	75	55.96%	91
muscle (mussel)	26.87%	102	42.83%	105
astronauts (astronots)	27.47%	139	34.75%	173
opposite (oposite)	24.24%	92	41.01%	95
shoulder (sholder)	65.66%	52	66.67%	51
button (butten)	60.40%	44	79.19%	40

WORD	NAPLAN ERROR		DICTATION ERROR	
	% correct	# Errors	% correct	# Errors
effects (effects)	40.61%	81	59.39%	88
volume (vollume)	84.04%	38	77.98%	68

Year 5: Error Unidentified

WORD	NAPLAN ERROR		DICTATION ERROR	
	% correct	# Errors	% correct	# Errors
millions (milions)	78.79%	52	73.33%	63
oxygen (oxegen)	25.86%	102	49.49%	134
properly (propley)	38.38%	92	54.34%	93
since (sinse)	62.63%	51	79.80%	51
lizard (lizerd)	66.87%	90	79.60%	49
climb (clime)	68.69%	73	83.43%	30
taste (taiste)	66.26%	55	80.00%	30
version (vershion)	48.89%	102	65.66%	94
marathon (marothon)	43.64%	86	73.33%	68
fitness (fittness)	39.39%	78	71.11%	50
disappointed (disapointed)	14.95%	102	17.37%	113

Year 7: Error Unidentified

WORD	NAPLAN ERROR		DICTATION ERROR	
	% correct	# Errors	% correct	# Errors
since (sinse)	84.18%	20	91.35%	27
lizard (lizerd)	82.22%	25	88.09%	27
taste (taist)	79.12%	28	89.23%	15
climb (clime)	82.06%	36	90.05%	15
version (vershion)	78.79%	42	82.54%	50
consumed (consummed)	74.23%	58	81.24%	61
marathon (marothan)	69.82%	35	84.18%	44
fitness (fittnes)	61.01%	33	80.26%	28
description (descripshun)	60.20%	56	66.39%	74
poisonous (poisonus)	43.07%	110	44.70%	126
overwhelmed (overwelmed)	43.39%	71	53.02%	77
antique (anteak)	41.44%	84	65.42%	94

WORD	NAPLAN ERROR		DICTATION ERROR	
disappointed (disapointed)	33.12%	53	32.79%	66
announcement (anouncment)	20.07%	67	40.95%	84

Year 7: Word identified

WORD	NAPLAN ERROR		DICTATION ERROR	
	% correct	# Errors	% correct	# Errors
community (community)	71.13%	48	81.40%	62
equipped (equipted)	10.60%	76	20.88%	76
previously (previusly)	61.50%	83	75.69%	85
surgery (sergary)	36.87%	72	65.91%	83
mischief (misscheif)	29.20%	62	40.95%	149
recognise –ize (recanise)	26.43%	111	40.62%	128
immediately (imediatley)	20.07%	107	42.90%	180
secluded (sicluded)	20.72%	122	41.27%	145
athletes (athleats)	38.99%	73	60.03%	83
substantial (substaintal)	35.40%	140	37.85%	182
performance (performence)	63.46%	65	77.00%	69

Year 9: Error identified

WORD	NAPLAN		DICTATION	
	% correct	# errors	% correct	# errors
community (comunity)	83.30%	13	95.03%	16
previously (previusly)	80.36%	32	86.23%	34
surgery (sergary)	56.66%	28	80.81%	33
achievement (acheivment)	45.37%	21	63.21%	36
sufficient (suficent)	41.08%	56	62.08%	79
exotic (exsotic)	67.95%	42	82.62%	38
imagination (imaganation)	77.88%	29	92.1%	32
substantial (substaintal)	59.59%	54	58.01%	78
performance (performance)	88.26%	25	91.65%	18

Year 9: Error unidentified

WORD	NAPLAN		DICTATION	
	% correct	# of Error patterns	% correct	# of Error patterns
system (sistem)	93.00%	12	97.74%	6
consumed (consummed)	87.58%	21	88.26%	21
evacuate (avacuate)	77.20%	45	91.65%	21
failure (falure)	77.88%	43	88.49%	5
recreational (recreasional)	72.01%	37	86.46%	37
overwhelmed (overwelmed)	65.24%	34	73.59%	33
antique (anteek)	48.76%	66	82.17%	43
applauded (aplorded)	34.99%	64	68.62%	51
recipients (recipiants)	42.21%	69	44.24%	81
vulnerable (vunerable)	35.89%	65	41.76%	93
announcement (anouncment)	37.25%	30	61.63%	42
negligence (neglegence)	18.51%	68	26.19%	63
satellite (satalite)	7.00%	47	18.51%	49

WORD	NAPLAN		DICTATION	
	% correct	# of Error patterns	% correct	# of Error patterns
camouflage (camiflarge)	11.51%	76	20.77%	72
faint + feint (feignt)	56.21%	56	70.20% + 18%	15
government (goverment)	81.72%	12	90.97%	19

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