

ACTION RESEARCH

Hypothesis

The explicit teaching of segmentation / syllabification of two syllable words improves spelling ability.

ABSTRACT

Year six students with spelling skills well below grade level were divided into two groups. Their lack of spelling ability was identified using the South Australian Spelling Test and the Peters Dictation Test. The intervention group received specific syllable instruction in how to analyse the units in words using lists of compound and two syllable words. The second group were given similar sets of words as spelling lists and received the usual class instruction from their teachers but no specific teaching. The post tests revealed that the teaching of segmentation skills and learning about syllables did improve the groups spelling ability. This would indicate the importance of specific spelling instruction in segmentation and syllabification particularly with students who have spelling difficulties.

INTRODUCTION

Some students at the upper primary school level have difficulty spelling multi syllabic words. This lack of phonological development impacts on their ability to function at a required level in the written components of their schooling as well as their self-efficacy as written language users. These students do not have the strategies to utilize their phonological awareness (sound knowledge) when spelling unfamiliar words and often regard themselves as poor spellers who don't have any chance of improving.

Spelling is an essential part of literacy learning in our schools because much of our learning deals with written literacy tasks. It is acknowledged by many researchers that spelling will be learned within the context of writing because it is a part of writing and it will be learned as a consequence of being a writer and a reader. Rightly or wrongly the ability to spell is often used as a benchmark for whether our education systems are failing or not in the field of literacy. It is important that students do learn to spell in order to write or have their writing read by others.

If we adhere to Templeton's view (2003) of the English spelling system as one that represents sound as well as meaning then students need to learn about how these are linked in order to develop their spelling ability. They also need to learn to how to use phonetic, visual and morphemic strategies to spell more complex words.

Other research has indicated that the development of spelling does follow a sequential set of stages, that increase in complexity. Even though there is an order for spelling students often use a variety of strategies from different stages to write particular words. While other research adheres to the view that "spelling development is a continuous process during which children can use a variety of sources of knowledge from a very early age." (Nagy, Berninger et al 2003)

According to Beers & Henderson (1997) and Gentry (1982) as cited in DECS 1997) students learn to spell by deducing the underlining rules of the English spelling system

and not by rote memorization. The students in this study support this finding as they have learnt some spelling rules such as short and long vowels as in tap and tape but they haven't extended this knowledge into a useful strategy or made generalisations about spelling which enable them to spell multi syllabic words.

Older students with spelling difficulties often rely on one strategy e.g. phonetic strategy friend for friend, Leshure for leisure. They have the ability to tap or clap the number of syllables in words but there is little evidence that this skill is helping them to spell because they don't have the understanding of what a syllable is.

When words increase in complexity these students tend to write only the first syllable and some random letters for the other syllables and often omit the vowels.

The purpose of this study is to examine whether specific syllable instruction will improve students ability to spell unfamiliar multi syllabic words.

Bean and Bouffler (1997) wrote about the importance of syllabification when they wrote "syllabification is important to pronunciation, and pronunciation is important to spelling since a high percentage of English words are phonetically regular."

According to Bhattacharya & Ehri (2004) "syllabification involves segmenting a multisyllabic word into its constituent syllables so that each syllable contains one of the vowel nuclei in the word." If students are to learn how to segment words they need to have this understanding of a syllable as well as an understanding of stressed and unstressed syllables. In the lessons these student were taught about the features of syllables in words and how to use strategies to improve their spelling. They were taught to spell words by dividing the word into the correct number of syllables, to question and talk about how they arrived at their spellings. Pronunciation of words and the effects of this on spelling, the use of analogy e.g knowing how to spell rain aids the spelling of terrain as well as using mnemonics to help remember spellings was also discussed. It is hoped that these lessons will help these students become more aware of the strategies available to them and to understand that in order to improve their spelling ability they must utilize this knowledge.

To determine whether the explicit teaching of syllabification would result in improved spelling ability a control group was given similar sets of words for spelling but without any instruction in syllabification.

METHOD

This study used a case study OXO (Assess Teach Assess) design in which progress in spelling ability following specific phonological awareness teaching was monitored with year six students who have displayed spelling difficulties especially with multi syllabic words.

Participants

The intervention group comprised of 4 year six students, 3 girls and 1 boy who are in the same composite 5 / 6 class. The group originally had another male member but due to lack of school attendance on a Monday it was better not to include him. As a result of a job share teaching situation within this class there were only 2 intervention sessions taken each week.

After compulsory classroom testing in the areas of reading, spelling and numeracy at the start of the year it was apparent that some students needed intervention to improve their written literacy skills. These particular students were targeted because they all performed poorly on the spelling and dictation components of the test in comparison to the other year six students. As a result their spelling errors in the South Australian Spelling Test and the Peters Dictation test were further examined using a modified version of the Spelling Error Analysis chart (Fountas & Pinnell 1998) found in the

appendix as table 5 and a common type of error was identified. Although there were many errors the main one appeared to be the lack of ability to spell multi syllabic words. The students' lack of spelling skills has impacted on their written literacy tasks across the curriculum and will continue to impede their development at the secondary level if they do not have the strategies necessary to assist with spelling. They need to realize that there are spelling strategies that they can utilise to improve their spelling.

All four students regard themselves as poor spellers and were unanimous in their agreement with Student 3 who rolled her eyes and described herself as a "hopeless case who will never get it. It's just too hard." It is apparent that each session will need to incorporate some time for building a positive attitude to spelling as well as teaching spelling knowledge. They also need to realize that there are spelling strategies that they can learn and utilise to improve their spelling and that spelling is important if their written work is to be read.

Early observation of their approaches to written literacy tasks are as follows:-

Student 1 is a conscientious student who uses the philosophy that if the work presentation is excellent the spelling errors won't be noticed and that she can ask a classmate how to spell before she dares to write it. She is not a risk taker.

Student 2 is also conscientious and although she will take a risk with her spelling she will procrastinate by spending too much time with decorating the headings and titles of her work rather than write.

Student 3 is an articulate student who is very verbal about her lack of ability and presents messy and incorrectly spelt work that is rushed just to get the task finished. She does not bother to edit her work unless requested. The number of spelling errors that indicated a problem with syllabification was not as great as the other group members but I felt that because of her poor spelling these sessions might help her.

Student 4 will write very basic sentences with little detail or care about the spelling because everyone knows he can't spell. When questioned about a spelling error he is able to correct the error especially with smaller, more basic words. He has not developed the habit of self editing his work. He has had some speech therapy in the middle primary and tends to mumble when speaking. He also has the tendency to have extra days off which does not help his learning.

Student 1, 2 & 4 have had literacy difficulties through out their schooling, have had all the usual literacy tests and have had ACER spelling mastery and corrective reading intervention from years 3 to 6. The fourth student who is new to the school has not had any intervention until this year.

All of the students spell 3 and 4 letter words phonetically and they are able to recognise the number of syllables in a spoken word but omit a syllable when writing multi syllabic words. They all agreed to join this intervention group as long as it was held with in the classroom.

All students were given John Munro's orthographic word recognition test more out of curiosity and the awareness that students often recognize correct spelling even if they cant actually spell the words themselves. Time and other constraints did not allow this aspect to be investigated more fully.

The intervention group's entry details are shown in table 1.

The control group's details are in table 2

Table 1

	Age	Spelling Score	Dictation	John's Orthographic Word Test
Student 1 Female	11 years 6 months.	34 = 8.8 – 9.9 years	67 / 100	21 / 41
Student 2 Female	11 years 10 months	38 = 9.7 -10.9 years	63 / 100	26 / 41
Student 3 Female	11 years 5 months	32 = 8.5 – 9.6 years	61 / 100	26 / 41
Student 4 Male	11 years 5 months	33 = 8.3 - 9.3 years	54 / 100	29 / 41

Table 2

The control group's entry details

	Age	Spelling Score	Dictation
Student 1 Female	11 years 7 months.	39 = 9.1 – 11.0 years	57 / 100
Student 2 Female	11 years 7 months	38 = 9.7 – 10.9 years	58 / 100
Student 3 Female	11 years 1 months	37 = 9.4 – 10.6 years	66 / 100
Student 4 Male	11 years 7 months	36 = 9.2 – 10.4 years	59 / 100

Pre and Post Testing Materials:

1. South Australian Spelling Test is a standardised test of spelling achievement for students in the age range of 6 years to 15 years.
2. Peters Dictation Test is a set of 4 dictation passages that are graded roughly to relate to Years 3 to 6. According to Peters “They are 100 words in length - except for Dictation one which is 50 words in length – and contain samples of the commonest types of words likely to produce deviant spelling.” The test has a diagnostic grid for error analysis.
3. Spelling Patterns Orthographic Recognition test by John Munro

Procedure:

The students were taken for 2 sessions a week over a 10 week period for 30 – 40 minutes. Due to circumstances beyond the teachers control the sessions were completed as follows; 2 sessions each week for 4 weeks then 2 weeks without any sessions and the 2 sessions a week for 4 sessions. The intervention sessions were taken on the Monday and Tuesday of each week. Students were asked to revisit and practise the words on one of the other days during the week but often this was not done and the intervention group teacher had no control over this. The first session set the format followed in subsequent sessions except that at the start of sessions 2 –14 there was a review of the previous session's words.

These sessions were conducted within the student's classroom. Prior to the intervention sessions beginning the entire class were taught about the **schwa** and contrary to some research these students found it quite interesting and used the term often when discussing vocabulary and spelling.

The spelling sessions were based on John Munro's Phonological Awareness Appendix 10 in his lecture notes(2004). The words studied were not in context with the term's topic being studied because the teacher thought it more important to teach a specific skill and give these students another chance to become better spellers.

Lessons 1 – 4 dealt with the revision of compound words where there was equal stress on both syllables.

Lessons 5 – 10 dealt with teaching the students how to spell 2 syllable words containing short vowels in each and where the second syllable is de-stressed.

Lessons 11 –14 dealt with teaching the students how to spell 2 syllable words containing short vowels in each and where the first syllable is de-stressed.

In each of the sessions the students were asked to segment the words, discuss the letters/sounds that were audible when the words were pronounced, write the words and discuss the strategies that they used to spell the words. Two weeks after the conclusion of the trial sessions both groups of students were given the same tests as before the trial started. The details of these sessions are found in the results section below. (The control group did not do the third test due to circumstances beyond my control.)

RESULTS

The results of the posttests show a slight improvement in the students spelling scores. The students scored better results on the Peters dictation test than the South Australian spelling test in both groups however the scores of the intervention groups were overall better than those of the control group. The posttest results are shown in tables 3 and 4 and contain a positive or negative number that indicates the movement in the raw scores between the post and pre tests for both groups.

The reasons for the better results in the dictation test could be explained in terms of the tests context. The dictation allows the students a chance to read over the text and possibly use the context to help self correct any errors where as the spelling test does not provide a context for this self-correction.

The differences in the results between the two groups may also be due to the fact that the intervention group had become more conscious of their spelling and their self-efficacy in spelling had grown. They have learnt that they are capable of changing their spelling habits and to be more positive about spelling and its importance.

Students 1 & 2 of the intervention group also showed a marked improvement in their ability to recognise correct spelling as in Munro's Orthographic word test. This could be due to the fact that these 2 students are very eager and determined to improve as well as being very focussed during the lessons.

The improvements made by all students could also be due to the fact that they are a little older and they are developing their literacy skills by usage and exposure in school learning tasks.

Table 3 Post test results for intervention group

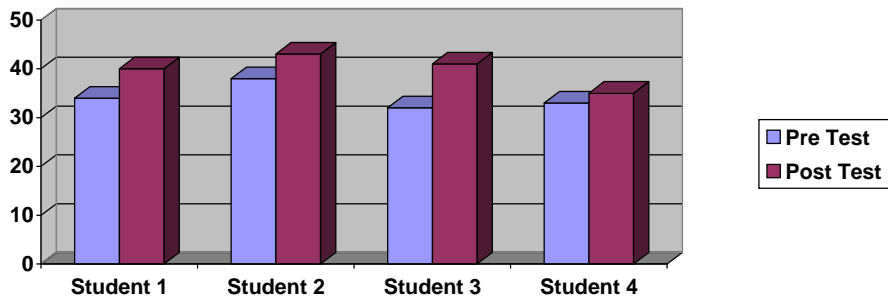
	Age	South Australian Spelling Score	Peters Dictation Test Score	Orthographic Recognition Test
Student 1 Female	11 years 7 months.	40 = 10.2 – 11.3 years + 6	83 / 100 + 16	30 / 41 + 7
Student 2 Female	11 years 11 months	43 = 10.1 – 12.0 years + 5	74 / 100 + 11	32 / 41 + 6
Student 3 Female	11 years 6 months	41 = 10.4 – 11.5 years + 9	73 / 100 + 12	27 / 41 + 1
Student 4 Male	11 years 6 months	35 = 8.11 – 10.1 years + 2	66 / 100 + 12	30 / 41 + 1

Table 4 Post test results for control group

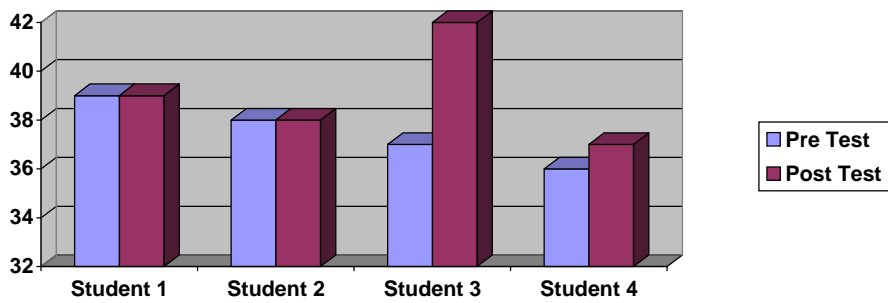
	Age	South Australian Spelling Score	Peters Dictation Test Score
Student 1 Female	11 years 7 months.	39 = 9.10 – 11.0 years 0	64 / 100 + 7
Student 2 Female	11 years 11 months	38 = 9.7 – 10.9 years 0	60 / 100 + 2
Student 3 Female	11 years 6 months	42 = 10.7 – 11.7 years + 5	69 / 100 + 3
Student 4 Male	11 years 6 months	37 = 9.4 – 10.6 years + 1	63 / 100 + 4

The graphs below show the differences between the intervention groups and the control groups pre and post scores for each of the tests.

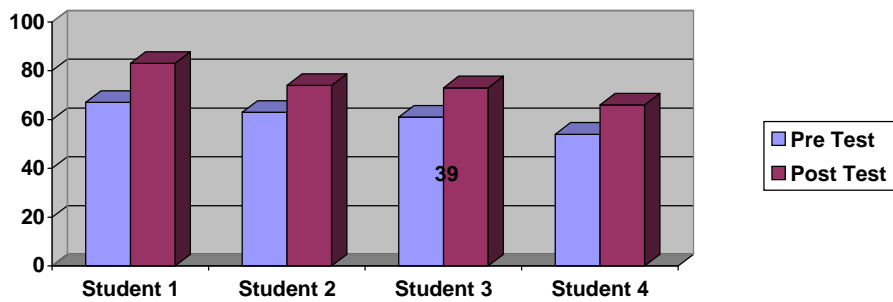
Graph 1 Intervention group South Australian Spelling Test Results



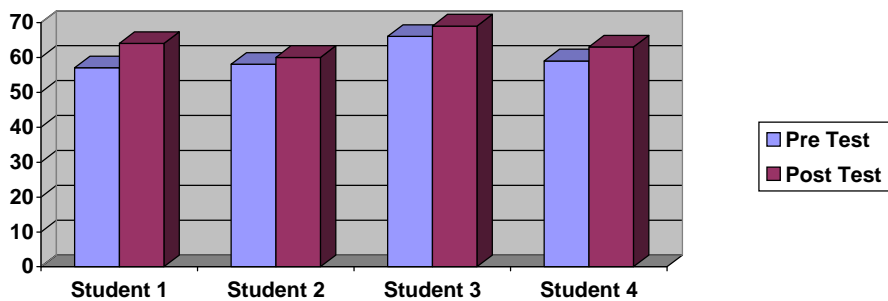
Graph 2 Control group South Australian Spelling Test Results



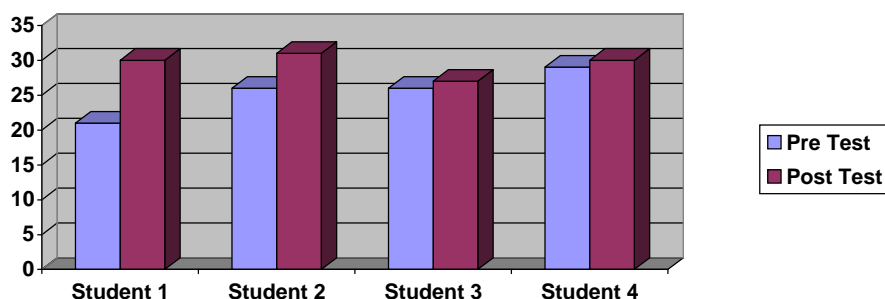
Graph 3 Intervention group Peters Dictation Test Results



Graph 4 Control group Peters Dictation Test Results



Graph 5 Intervention group John Munro’s Orthographic Word Recognition Test Results



While the scores alone don’t present much useful information the spelling error analysis does and this is where the development in spelling ability can be ascertained and where the two groups differed. The errors made by the intervention group were of a higher quality than the others in comparison to their pre and post test results. The post test of the intervention group also showed an awareness of the syllable in their spellings as most errors did include the correct number of syllables, which was a vast improvement from the errors in the pre test.

The proceeding section explains the spelling development shown through their error analysis made by each of the four students in the intervention group.

Student 1

South Australian Spelling Test

Pre test

6 errors due to problems with syllables 12 errors due to problems with pronunciation

Post test

2 errors due to problems with syllables 2 errors due to problems with pronunciation

Peters Dictation Test

Pre test

4 errors due to problems with syllables 9 errors due to problems with pronunciation

Post test

1 errors due to problems with syllables 0 errors due to problems with pronunciation

The following table shows examples of changes in her errors.

Correct Spelling	Pre Test	Post Test
rough	rofe	ruff
mountainous	motenes	mountainace
explained	exblan	explained
pilot	pilete	pilot
freezing	fressy	freazing
departure	debacher	departure

Student 2

South Australian Spelling Test

Pre test

18 errors due to problems with syllables 25 errors due to problems with saying or hearing the word correctly

Post test

4 errors due to problems with syllables 6 errors due to problems with saying or hearing the word correctly

Peters Dictation Test

Pre test

9 errors due to problems with syllables 9 errors due to problems with saying or hearing the word correctly

Post test

0 errors due to problems with syllables 4 errors due to problems with saying or hearing the word correctly

The following table shows examples of changes in her errors.

Correct Spelling	Pre Test	Post Test
surface	seafs	surfise
excitement	esitment	exsitement
mountainous	montens	mountenes
machine	meshn	mechine
damaged	damed	damiged
requesting	recsen	recuesting
surrounded	serounded	surounded

Student 3

South Australian Spelling Test

Pre test

5 errors due to problems with syllables 5 errors due to problems with saying or hearing the word correctly

Post test

4 errors due to problems with syllables 6 errors due to problems with saying or hearing the word correctly

Peters Dictation Test

Pre test

1 errors due to problems with syllables 7 errors due to problems with saying or hearing the word correctly

Post test

0 errors due to problems with syllables 0 errors due to problems with saying or hearing the word correctly

The following table shows examples of changes in her errors.

Correct Spelling	Pre Test	Post Test
rough	ruf	rouf
precision	preshision	presision
noticed	notis	noticed
aeroplane	earplane	aeroplane
components	componts	components
immediately	emediletly	emediatly
surrounded	sarounded	serounded

Student 4

South Australian Spelling Test

Pre test

17 errors due to problems with syllables 21 errors due to problems with saying or hearing the word correctly

Post test

5 errors due to problems with syllables 5 errors due to problems with saying or hearing the word correctly

Peters Dictation Test

Pre test

12 errors due to problems with syllables 9 errors due to problems with saying or hearing the word correctly

Post test

2 errors due to problems with syllables 3 errors due to problems with saying or hearing the word correctly

The following table shows examples of changes in his errors.

Correct Spelling	Pre Test	Post Test
machine	mecein	mechine
freezing	frezz	frezeing
surrounded	seroroed	srurounded
design	disen	desing
explained	exlphed	explained
conditions	condish	condishens
advanced	advare	advenced

Even though these students still have many errors they have become more aware that knowing how many syllables in each word will help them to spell words. Their attention to detail has improved. Visually and phonetically their errors are closer approximations to the correct spelling. The error analysis has allowed for more individualized spelling programs for these students.

The segmentation errors in the SAT post test of the control group were 10, 15, 9 and 8 and in the Peters Dictation post test 8, 6, 8 and 7. These results showed very little movement from the segmentation errors made in their pre test scores.

DISCUSSION

Teaching at risk older students how to segment multi syllabic words into syllables does improve their spelling ability. It would appear even from this small sample group that giving explicit instruction in segmentation has produced some success.

The tests used in this study are not specifically designed to detect the effects of instruction in syllabification and may not be the best indicators for this. Nevertheless the results did show an improvement in the ability of these students to at least write the correct number of syllables in a word even if the spelling was incorrect.

The students have begun to understand the significance of both correct pronunciation and some of the spelling activities they have done over the years. For example the reason that they learnt to clap the number of syllables in a word can help with the spelling of that word. These students still have a primitive level of phonological awareness at the multi syllabic word level, that is their understanding of the sound system of the English language has not fully developed. They are able to hear the sounds but they don't always know what letters represents that phoneme.

The pre test analysis also indicated that these students often pronounced the larger words incorrectly. The improvement in this aspect was due to the many discussions in the lessons about how we are able to pronounce words in English.

In hindsight it may have been wiser to begin this study with some work on letter cluster patterns by revising their knowledge of onset and rime units in one syllable words before investigating two syllable words as the students are still making errors when writing words containing some of these dependable rime units.

The progress they have made whilst small has given them assurance that improvement is possible and they are more prepared to take risks especially with spelling tasks in the group as well as within the whole class environment. They were very attentive when discussing how to spell words or syllables and the strategies they used to spell a particular word. It was also obvious in the teaching group that these students were endeavouring to use some new knowledge in the proceeding lesson. Student 1 described how she remembered to spell 'damage' "I just say it wrong like dam age." This strategy of stretching words out was explored and discussed as a useful spelling aid during the lessons. Their self-efficacy has certainly improved over these short lessons; they are beginning to believe in their ability to learn.

These students don't appear to have learnt and stored in their memories sets of letter cluster patterns to use when spelling similar but unknown words. That is they don't know how to use their knowledge about letters, sound and meaning to spell similar words. They don't use analogy which according to Bhattacharya & Ehri (2004) is not only an important reading skill it is an important spelling skill.

This small study has ramifications for the literacy practices of the classroom. One of the implications for teaching spelling is the need to give students the opportunity to discover spelling rules by playing with and manipulating the sounds and letters in words. They need to question and describe what is happening to the spellings of words when changing from a process to a noun or adjective for example *explore to explorer to exploration*. If we agree with Templeton's (2003) view of the spelling system being one representative of sound and meaning then instruction in how these interact needs to be learned e.g soft enables us to spell soften, signal helps with the word sign.

The tests used in this study are not specifically designed to detect the effects of instruction in syllabification and may not be the best indicators for this. Nevertheless the results did show an improvement in the ability of these students to at least write the correct number of syllables in a word even if the spelling was incorrect.

Even though this study used isolated lists of words it is acknowledged that writing provides the purpose for spelling and should be taught within that context.

Older students who are at-risk in learning to spell benefit from instruction in how to segment words into syllables. Difficulties in spelling multi syllabic words may be reduced if the students can develop strategies to use this knowledge to assist in spelling unfamiliar words.

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Appendix 1

The aims of the following sessions were:

- to teach these students about syllables
- to teach them how to segment words when writing
- to develop positive attitudes towards spelling and their ability to spell
- to develop strategies to use when spelling.
- to develop an understanding of the importance of correct spelling.
- to listen to the ways we pronounce words
- to discuss the sounds we hear in words

Appendix 2

Lesson plan for the revision of compound words where there is equal stress on both syllables.

- Step 1 The teachers says each word. Students repeat the word.
- Step 2 What do you know about these words?
- Step 3 With correct response (compound words) ask How many syllables in each word?
- Step 4 Tap out each syllable.
- Step 5 What is the first syllable in the specified list word?
- Step 6 What is the second syllable in the specified list word?
- Step 7 What are the sounds that you can hear in the specified list word?
What vowel sounds do you hear? These are written by the teacher onto the board.
- Step 8 How do we spell the first syllable?
- Step 9 How do we spell the second syllable?
- Step 10 Students then write each of the specified list words.
- Step 11 Discuss students' spellings.
- Step 12 What strategies did you use to spell these words?
- Step 13 List the strategies for future use.

The last steps are essential in reinforcing the need to utilize the 3 main strategies available to the students. That is the visual, the phonemic and the morphemic strategies.

Appendix 3

List of compound words used in Lessons 1 - 4

1. into, teapot, today, cannot, cowboy, bookcase, outside, salesman, homesick, tuckshop, schoolroom,
2. mainland, makeshift, streetcar, classroom, lighthouse, mailbox, earwig, grapevine, snowball, lukewarm,
3. handsome, outline, Sunday, football, tonight, somehow, grandstand, roadwork, earmark, railway.
4. earthworm, flashlight, homesick, seacoast, someone, seashore, somewhere, postpone, headache, blackboard.

Appendix 4

Lesson plan for the teaching of 2 syllable words as used for lessons 5 - 14

- Step 1 Say the word then students repeat the word correctly.
- Step 2 Tap the number of syllables.
- Step 3 Say each syllable separately.
- Step 4 Say each syllable with the same stress on each.
- Step 5 Students asked to mark the page to show 2 syllables.
e.g. _____ / _____

- Step 6 Students write the word.
- Step 7 Discuss the spelling, the vowel in each syllable, the pattern in the words, the parts of the words they found difficult, what other letter combinations could represent that sound?
- Step 8 What strategies helped you write the specified word? Does it sound and or look correct? Did a word you know help you spell this one? Use of analogy?
- Step 9 Reinforce the fact that each syllable contains a vowel.

In each lesson the student are encouraged to verbalize how they approached the spelling of the words, the strategies used, whether their errors were good approximations or poor choices. The teacher and students discussed the links they could make between similar words. What mnemonics they may use to help them? E.g. student 2 related that for listen ‘you can listen to ten rules in a list’.

Appendix 5

Lists of two syllable words used in lessons 5 – 10

1. chicken, dozen, happen, heaven, linen, listen, oven, sudden, seven, often, modern, pattern, pigeon, robin.
2. captain, station, action, question, lemon, prison, apron, button, blossom, common, cotton, custom
3. bandage, cabbage, damage, savage, apple, barrel, rascal, signal, medal, metal.
4. bundle, castle, cattle, gentle, handle, jungle, kettle, little, middle, saddle, scramble, settle, single, struggle.
5. bigger, brother, bumper, clever, ever, butter, ladder, hammer, matter, member, finger, answer, gather, collar, cellar, doctor, error.
6. candy, cherry, country, copy, empty, ferry, carry, happy, heavy, hurry, many, marry, merry, monkey, plenty, study, silly.

Appendix 6

List of two syllable words used in lessons 11 – 14

1. accept, address, admit, arrest, among, assist, attack, attempt, attend, attract.
2. belong, began, begin, become, content, collect, contest, contract, control, connect, consent, commence, correct.
3. defend, depend, describe, discuss, distinct, erect, event, exact, expect, expense, express, effect.
4. immense, insist, inspect, instead, intend, itself, machine magic, possess, prevent, product, protect, suspect, suggest.

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