

CHAPTER 3 METHODS OF SPELLING
INSTRUCTION

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CHAPTER 3

METHODS OF SPELLING INSTRUCTION

3.1 INTRODUCTION

There is a plethora of studies which have examined spelling instruction from different perspectives. This chapter examines these studies and explores the related issues in order to draw implications for the proposed intervention study.

The majority of studies, as indicated in Appendix A, appear to be theoretical in nature rather than empirical. Furthermore, although spelling instruction has been extensively researched, there seem to be serious gaps between existing research and its application to the classroom. (Bouffler, 1984, Frith, 1980 and Winch, 1989). A review of studies by Seda in 1989 indicated that teachers in American classrooms continue to teach spelling the way they were taught or the way the textbooks prescribe. The researchers twenty-two years of teaching experience tends to indicate that while, on the whole, teachers are aware of the research, they do not know how to implement it. Westwood (1994) and Winch (1989) state that teachers are interested in learning about effective methods of assisting students to become better spellers. The researcher agrees with Winch (1989) that teachers are also asking for support in applying these approaches in the classroom.

It is argued that while it appears that the quantitative researchers have sought to control variables in an effort to make their findings reliable, they may have lost sight of the complexities of the situation in

which the learning of spelling occurs. Furthermore, it is argued that the great majority of quantitative researchers in this review were unable to conduct what Cohen and Manion (1989) would term 'true experiments'. On the other hand, much of the qualitative research would have to be referred to as 'loose' because although many may have considered the complex nature of the classroom, many have failed to address the need to carefully describe the research design. Therefore their reliability, validity and generalisability may need to be questioned.

3.2 METHODS OF SPELLING INSTRUCTION

The wheel seems to have been reinvented many times over as theories on spelling instruction have been refined and further refined. Nelson (1989) indicates a connection between traditional positions and the work of the developmental theorists. According to Nelson (1989) the developmental approach to spelling which is now emerging is not entirely new as she sees it as having evolved from earlier positions which continue to be seen in spelling instruction today:- the rote memory position and the generalisation position.

On the one hand, is the *rote memory position* which hinged on the notion that learning to spell is driven by rote memorisation (Nelson, 1989). Earlier, the letter was thought to be the key unit and memorisation was thought to result from a vocal repetition of letter names in a word combined with hand repetition and eye repetition (Nelson, 1989). Later, more weight was placed on the *visual* memorisation of words as wholes (Nelson, 1989). Since the word lists were thought of as merely an aid to fluency in writing and not a vehicle for developing generalisable skills the lists were arranged in order of frequency of use from year to year. Strategies were used, but only as a means to memorise words. Nelson (1989) argues that the problem with this position was that it viewed the learner as a passive recipient of instruction. Further it posed problems for those children with memory deficits.

Barnes (1989) points to another problem with this position. Formal spelling instruction, using the rote memorisation method, can only cover about 5000 words (grades 1-8). If literate adults can spell as many as 75,000 words, these were certainly not generalised from those formally taught

and/or memorised, and not all of these words were learned by looking them up in the dictionary (Barnes, 1989).

On the other hand, is the generalisation position which followed the findings of Hanna & Moore (1953) and Hanna, Hanna, Hodges & Rudorf (1966). Their investigations showed a high percentage of consistency of letter-to-sound relationships in English. According to the proponents of this position, word groups were examined for patterns of behaviour. Once a phoneme-grapheme pattern had been learned in a few words it was believed that the child could spell other words containing the same pattern.

Nelson (1989) argues that the developmental theorists were able to embody the theoretical and practical contributions of the former positions but went one step further by considering the types of knowledge the child brings to learning to spell. On the other hand, Wilde (1990) argues that the developmental approach, based on research and practice related to invented spelling is different enough from the traditional approach, both in beliefs and in the practices it implies, to be considered a truly new paradigm.

Read (1971) one of the founders of this developmental movement, shifted the focus from spelling being viewed as either right or wrong to a focus on creation of the spelling. Children were seen as using their knowledge of the English orthographic system to invent plausible written representations of English words. Researchers have shown that children comprehend the orthographic basis of English along a continuum of developmental stages.

3.21 DEVELOPMENTAL THEORY

To the developmental theorists, listed by Hodges (1981) :- Beers and Henderson, 1977; Beers, Beers and Grant, 1977; Gentry 1978; Templeton 1979; Zutell, 1979., learning to write/spell like learning to speak is a developmental process. Kemp (1987) also identifies Graves (1983) and Bissex (1980) as researchers into children's spelling development. These researchers no longer see young children as empty vessels ready to be filled with orthographic knowledge. Rather they view young children as

being aware of and able to use phonetic knowledge in their early spelling attempts. They believe that children progress, in successive stages, toward fuller and more abstract understandings of the English orthography (Henderson and Beers, 1980).

Graves' (1983) resume of students' writing development shows how children's spelling progresses, in general terms, through a number of phases.

Stage 1:	initial consonant only	G	(GRASS)
Stage 2:	initial and final consonant	GS	(GRASS)
Stage 3:	initial, final and interior consonant	GRS	(GRASS)
Stage 4:	vowel 'place holder' in the right position, but not the right vowel added	GRES	(GRASS)
Stage 5:	full spelling, using visual memory and better vowel memory	GRASS	(GRASS)

Gentry (1982) classifies these stages of development into pre-communicative spelling, semi-phonetic spelling, phonetic spelling, transitional spelling and correct spelling. The majority of the research into developmental theory refers to this orderly stage-like progression of word knowledge in similar terms. However Schlagal's (1989) work tends to support Henderson's (1985) findings of two advanced stages which he has termed "Syllable Juncture" and "Derivational Constancy". Henderson (1985) refers to the developmental progression in spelling as 1. Prephonetic Stage 2. Letter Name Stage 3. Within Word Pattern Stage 4. Syllable Juncture Stage and 5. Derivational Constancy Stage. At the Syllable Juncture Stage, as the name implies, the orthographic issue is the joining of syllables ... primarily the addition of inflections and affixes to word stems (Schlagal, 1989). The orthographic issue involved beyond the level of Syllable Juncture, Derivational Constancy, requires the student's penetration of the largely Greco-Roman vocabulary. (Schlagal, 1989)

According to Wilde (1990, 279), "children's learning to spell thus involves a gradually increasing understanding of a complex system that

consists of knowledge about relations between sounds and letters, about how words work, about higher-level letter patterns (such as those producing double consonants) and about relations between meaning and spelling." Bissex (1980) and Schlagal (1989) argue that children's spelling errors reflect their grasp of the patterns and principles informing English orthography. Schlagal's (1989) study indicates that spelling involves different issues and strategies as students progress through their schooling. He contends that if this is the case, then the teaching of spelling should be designed to assist the stabilisation of the emerging orthographic concepts by grouping children at instructional levels so that the words with which they are instructed and the principles to which they are introduced are matched with orthographic development. By being introduced to aspects of the spelling system at the optimum stage, children should not be confused with the seemingly surface irregularity but be made more aware of the regularity at the higher more abstract levels (Schlagal, 1989).

Gentry & Henderson (1980) assert that if the teacher de-emphasises standard spelling, the teacher will, through the child's non standard spelling, be able to infer the child's level of spelling development. Further the teacher should be able to gain an insight into "the child's knowledge of words as well as the child's conceptualisation of written language" (Gentry and Henderson, 1980, 115).

However, as Gentry & Henderson (1980, 116-117) warn "in order to respond appropriately to non-standard spelling, the teacher must recognise transition from one developmental stage to the next." Further, despite a certain uniformity about these stages, Kemp (1983) and Schlagal (1989) warn that the invented spellings of individual children seldom fit exclusively into a single stage. Kemp (1983) also cautions that these invented spellings are sometimes found in the less mature writing of children at later levels of schooling as well as in the earlier, and that there can be a considerable mixture of these features in any one piece of writing by particular children.

There is compelling argument for the proposed intervention study to design spelling instruction that is matched to the student's level of orthographic development. It seems advantageous to use Henderson's (1985) stages of spelling and word knowledge as a basis for placing students

for instruction, because it is believed that the phase or stage name provides a close description of what a student can do at that particular stage. For example, a student at the Within Word Stage is experimenting with the abstract nature of the long vowel marking system and a student at the Syllable Juncture Spelling Stage is beginning to experiment with how syllables combine. The study will also need to heed the warnings of Kemp (1983) and Schlagal (1989) and realise that not all students will fit neatly into these stages.

3.3 AN INTEGRATED APPROACH

Hodges (1982) asserts that even though instruction must be appropriate to the student's developmental level, moving from simpler to more complex understanding of written language, the focus should be on presenting spelling as part of an integrated system. The proponents of "whole language"(Holdaway, 1979), "process writing" (Graves, 1983) and "developmental spelling" (Gentry, 1982) question long-held assumptions about spelling instruction. They argue that children were often engaged in meaningless workbook exercises. They argue that some children were asked to memorise word lists that were conceptually too difficult, while others were asked to learn words that they already knew because the graded list was aimed at meeting a grade expectation and not at taking into consideration the range of individual abilities that were present in one class (Jenkins 1986). They also argue that spelling was an isolated subject without any obvious connection to other learning such as current reading and writing experiences and often to each other.

Anstey and Bull (1984) point out, research and teachers' own experiences have indicated that skills taught in this manner are seldom transferred and used by children in the writing situation. "These children often become hung up on only writing correct spelling; this usually results in less writing and more stilted spelling." (Jenkins, 1986, 44).

Fernald (1943) was ahead of her time in recommending that spelling should be taught as part of an integrated language arts program which should include learning to spell words that pupils are learning to read and write as well. Many contemporary writers agree (Bolton & Snowball, 1985 ; Bean & Bouffler, 1987; Anstey & Bull, 1984 ; Wilde, 1990)

that students function effectively only with written language that they understand. Therefore it makes sense that the three aspects of written language - reading, writing, and spelling - be considered as an integrated unit. " What children learn from one aspect of the language arts is used to explore and develop others" (Strickland and Morrow, 1989, 427).

Bolton and Snowball (1985) and Henderson and Templeton (1986) suggest that progress in spelling entails word knowledge derived from reading and from applying that knowledge through purposeful writing and spelling. According to Bouffler (1984, 4), "standard spelling is learned in the interface between reading and writing." The Education Department of Western Australia (1994) refers to three major components of effective communication. Spelling is referred to as a "sub-set" of writing which should "only be considered within the context of writing" (Education Department of Western Australia, 1994, 13). The Department of Education, Queensland (1994) refers to spelling as one of the textual features of written language which in turn is considered within the social context and the cultural context.

It is believed that the proposed intervention study should heed the advice of contemporary research by placing spelling instruction within meaningful contexts to allow for cross transfer of knowledge between reading, writing and spelling. However, an integrated approach with little direct or systematic spelling instruction is not without its faults.

The approaches of Bean & Bouffler (1987b) and Wilde (1990) advocate that formal and or/or direct instruction be discontinued. However, in Wilde's words " it should be noted that there is as yet little empirical support for such an approach" (Wilde, 1990, 280). Although Bean & Bouffler (1987a, 1987b) are enthusiastic about their approach, their action research (1987b) in actual classroom situations presents little evidence that the students' self-directed discovery of how to spell words correctly results in significantly greater gains in spelling achievement than does the direct and systematic teaching of spelling. They could not claim that the children in their project were better spellers (on the Dolch word list) than the group of children who had been on a Quota program, a textbook approach to the teaching of spelling.

Bouffler (1984, 4) and Wilde (1990) argue that "too many teachers have adopted a so-called 'process' approach to writing without understanding the theory or philosophy behind it." The researcher's twenty-two years of teaching experience tends to indicate that teachers in many classrooms are encouraging children to use their own 'invented' spelling when they write. Many teachers provide 'mini lessons' for individual students during writing conferences. However, many teachers find this procedure very time consuming and they, along with researchers (Fulk & Stormont-Spurgin, 1995; Peters, 1985; Routman, 1993; Westwood, 1994 & Winch, 1989) are finding that not all students are 'catching' spelling in this way. Other teachers, who believe in an integrated approach, tend to turn to spelling text books to provide structure in their programs and because of covert and, in some cases, overt pressure from parents. Unfortunately, the widely used spelling textbooks continue to follow a model emphasising the memorisation of lists of words and invariably the books are published for the whole-class-set sale. In many instances, therefore, many students are not being placed for instruction at their optimum level of spelling development. Further, while some students may get spellings right in the weekly test, these same spellings may be spelt incorrectly in samples of writing.

3.4 FORMAL SYSTEMATIC INSTRUCTION / WORD STUDY

Templeton (1991) contends that teachers' efforts to place instruction in a more meaningful context, to render it genuine, purposeful, and authentic, should not eliminate the type of direct and systematic instruction in word knowledge that research is increasingly demonstrating is critical. The primary source of word knowledge is actual reading and the primary means by which this knowledge is exercised and developed is purposeful writing, but there is considerable evidence that the study of words out of context also plays a critical role in this development (Templeton, 1991). Others suggesting that formal study is required to increase spelling competency and consciousness apart from informal learning only include:- Barnes (1989), Bloodgood (1991), Bolton & Snowball (1985), Hodges (1981), Rowe & Lomas (1985), Turner (1984) & Zutell (1980). However, the dilemma that teachers face is that traditional spelling lessons tend to overlook the specific problems children have with words.

For the majority of researchers suggesting formal word study, formal instruction means the presentation and study of lists of words. As Henderson & Templeton (1986) argue, how students should examine words is a controversial issue. Some theorists and practitioners argue that spelling words should not be arranged into lists; they believe that such learning will occur in reading and writing. This conviction is in part a reaction to the ways in which lists have traditionally been organised. In the past, exposure to words was more likely to be through simply assigning words to be memorised rather than teaching about words (Gentry, 1987).

Hudson & O'Toole (1983) suggest frequently used word lists, theme word lists and words from the children's own writing as words for study. In fact, as Templeton (1991) notes, a common concern of many educators has been that students learn to spell the most frequently used words in writing, so the lists should consist primarily of words that students use frequently in their writing, and the words they are likely to misspell (Dale, O'Rourke, & Bamman, 1971 & Jacobson, 1982). Hudson & O' Toole (1983) argue that the teaching of spelling is far more effective if the words taught are the words that children need and want in their writing. Unfortunately, a problem arises with taking words out of student's writing. Children who are reluctant and/or 'safe' writers produce very little to be of use to the teacher in preparing words for study. To overcome this and to further integrate reading with writing, many teachers take words for study out of current reading materials.

Henderson (1985) and Templeton(1991) advocate a more structured approach towards the selection of words for word study. They argue that contrary to the suggestions of several educators, the words should not be selected at random from reading materials; rather they should be grouped or categorised according to a common pattern or principle. Furthermore, these words should be familiar to students because students for the most part have already encountered them in reading and that the list words should reflect the features of spelling that students are developmentally ready to examine (Templeton, 1991). Even though Henderson (1985) and Templeton (1991) propose very structured traditional programs involving weekly lessons, pre and posttests, and grading words by structure there are

two very significant ways in which their approaches differ from other traditional approaches. Firstly, although words are graded by structure, this occurs in relation to the child's position on the developmental word knowledge continuum. Secondly, children are actively engaged in 'word sorting' procedures that encourage an examination of the set of spelling words for their fit with general spelling principles.

Although the advocates of formal word study may differ on how or what words are to be selected for study, few would disagree with Templeton's (1991) proposals that :-

- . At all levels a common core of words should be examined;
- . The words to be studied should be in accordance with the students' development;
- . A variety of strategies and activities should be offered in which the words are productively examined; and
- . The philosophy that spelling is logical should be reflected.

"What is critical in spelling instruction is the requirement that pupils examine words " (Henderson and Templeton, 1986, 314). With the 'inside-out' theorists promoting good reading as good prediction, students are predisposed to use the least amount of visual information that they can get away with (Kemp, 1987). Consequently, students' progress in reading development tends to lead them further away from the detailed analysis of words that is necessary for spelling growth. To learn to spell words on the higher levels that the structure of English spelling reflects, students need to study words, to make discriminations and to practise these routines of examining words." Proponents of word study therefore suggest the construction of learning environments in which children have the opportunity to "formulate, test and evaluate their own hypotheses about the orthography" (Zutell, 1980, 64). Further, Zutell (1980) advocates the organisation of opportunities for children to compare and contrast words on a variety of levels (sound, structure, syntax and semantics).

Bloodgood (1991) advocates word study activities that enable students to explore and practice elements of orthography. Such activities provide a logical basis for knowledge and lend support to memory. Bloodgood (1991), Hodges (1981), Zutell (1980) and others recommend games and activities such as 'word sorts' and 'word webbing', Word Hunts, Word Concentration, Homophone Rummy, Inflected-Ending Go Fish that can be used to enhance the young child's growing awareness of words and how they are spelled. Poker Chip Spelling is recommended by Block and Peskowitz (1990) as a means of developing metacognitive knowledge. Games as opposed to workbook activities not only provide enjoyment but promote inquiry and experimentation with words in settings that are challenging and exciting rather than rigid and monotonous. As Turner (1984) emphasises, treated in interesting ways words can be fun!

A common source of word knowledge underlies the processes of encoding of words in writing and decoding words in reading (Templeton, 1991) and as such could be a unifying factor linking word knowledge across the traditional domains. According to Templeton (1980, 93), "it is difficult to separate spelling instruction from vocabulary instruction for one reinforces the other." "Vocabulary and spelling instruction become two sides of the same coin, one reinforcing the other - indeed, explanations of one must be in terms of the other" (Templeton, 1989, 245). Further, according to Cunningham and Cunningham (1992), research suggests that invented spelling and decoding are mirror-like processes that make use of the same store of phonological knowledge.

Templeton (1980) argues that our responsibility as teachers is to direct our students' attention to the structure of printed words. A "conscious examination should not only generate spelling competency but reinforce a qualitatively better way of examining word structure" (Templeton, 1980, 95). Researchers have suggested some specific ways of accomplishing this and some spelling texts (Bolton & Snowball, 1985; Hudson and O'Toole, 1983 & Lomas & Rowe, 1985) have begun to explore these aspects. However, Wilde (1990) suggests that textbooks can be a source of rules for instruction but must be used thoughtfully.

There is substantial evidence that word study, using categorisation sorts and word-play activities, helps students investigate word patterns and become knowledgeable spellers who do not need to rely solely on memory. Integration of spelling and word study activities with reading and writing provides further reinforcement and encourages learning in all of the language arts. "Memory is not a sufficient tool to make spelling meaningful and lasting " (Bloodgood, 1991, 203). However, "an integrated program of reading, writing and word study allows students to apply knowledge at their appropriate instructional levels and offers teachers coherent manageable tools to augment memory in spelling tasks" (Bloodgood, 1991, 210).

It is to be noted that the operative word in the above discussion is 'apply'. Just as word study is important to enable students to discover word patterns because, according to (Templeton, 1991), many if not most students are not noticing the patterns and making the connections on their own, experience tends to indicate that not all children are able to apply what they learn in formal spelling instruction to reading and writing tasks. Bryant & Kopytynska (1976) , McGarrigle & Donaldson (1974) contend that young children frequently fail in cognitive tasks not because they lack the necessary aptitude, but because they do not know exactly when it needs to be applied. Further, a surprising discovery of Bryant and Bradley's 1980 research indicated that children need to be shown what they can do. The proposed intervention study would need to provide students with opportunities to explore words and their relationships in the English spelling system; integrate these word study activities with purposeful reading and writing activities and purposefully teach students how to apply what they have learned in word study to reading and writing.

3.5 BUILDING BRIDGES

Systematic instruction and whole language advocates make equally persuasive arguments. However, to adhere to one side because it does not "fit theoretical dogma" (Morris, 1989, V) in ignorance of considerations of the other will not suffice in the long run. Moreover, in taking a one-sided stance we could very well be 'throwing the baby out with the bath water'. As Spiegel (1992, 43) advocates, " bridges can and must be built between whole language and more traditional approaches to literacy instruction to

enable teachers to blend the best of both in order to help every child to reach his or her full literacy potential." We need to examine what makes sense about traditional practice and how we can modify that practice to fit in with the new theoretical insights into the way in which spelling is learned to better meet the needs of students (Morris, 1989).

As Morris (1989) advises we should be looking at ways of augmenting, not supplanting that which has already made sense with regard to spelling. He (1989, V) suggests that word knowledge "influenced by reading and writing experience but in turn underpinning future spelling development, could become an important, integrative concept."

3.6 POOR SPELLERS

While teachers are concerned with how to teach the mechanics of writing (spelling) within the process (Anstey & Bull, 1984; Winch, 1989), "the hard core failure in spelling remains the biggest problem in the minds of teachers" (Winch, 1989, 15). Some students 'catch' spelling in the process of natural language development. Others do not 'catch' it at all. To them the orthographic system remains a mystery. In between, is a group who appear to 'catch' it in spelling instruction but fail to transfer this knowledge when writing.

Winch (1989) states that most of the data sheets in his survey into the teaching of spelling in the Sydney Metropolitan area made mention of this problem. Bouffler (1987a) suggests that there is no easy answer to the problem. She claims that experience has shown that in a large majority of the cases the students also have reading and writing problems, of which poor spelling is just a symptom and therefore she claims that it is no good treating the symptom without addressing the cause. These could well be students of low intellectual ability and as such many would be managed through individual education programs. Others could be students with average or above average intellectual ability with a learning disability. The researcher would agree with Bouffler (1987a) that difficulty in spelling is only one aspect of a multi faceted problem, but this does not mean that it should not be addressed.

Bouffler (1987a) mentions another group of students with spelling difficulties. She argues that in many cases where the students are in fact readers, they have reluctant attitudes to writing and tend to shy away from it because of poor spelling. She offers a de-emphasis on the need for standard spelling as a way of helping. However, these could well be the unexpected poor spellers referred to by Frith (1980) and as such need a great deal more than simply a de-emphasis on the need for standard spelling.

3.61 GOOD READERS / POOR SPELLERS

It needs to be pointed out at the outset that although many of the following studies refer to phonological and visual/orthographic strategies in their research, to think of reading and spelling requiring only phonological and visual/orthographic strategies would be simplistic. Other levels of linguistic information represented in printed English include graphemic, syntactic, morphemic, semantic and etymological information.

Frith (1980) hypothesises that good readers/poor spellers, whom she refers to as unexpectedly poor spellers, because they do not experience reading problems, are so successful in reading by partial cues, that they never attend to the letter-by-letter structure in words. Frith's (1980) findings were further supported by the research of Cohen (1980). He suggests that the child is able to '...switch' the visual code and still read for meaning fairly comfortably" (Cohen, 1980,147). Peters (1985) also refers to good readers many of whom are highly intelligent and well-read but who are poor spellers. She suggests that "these are frequently people who read at a very fast rate, who learned to read quickly, often even before they went to school" (Peters, 1985, 26). As with Frith (1980), Peters (1985) suggests that these children very rarely look at all of the individual words and instead use partial cues.

Kemp (1987, 11) and other proponents of the psycholinguistic movement of the 1970 s advocate the use of a process in reading that "continuously uses in-head cues about meaning, which predisposes us to use the least amount of visual information we can get away with." Classroom experience tends to show that perhaps more children have

accessed text through this reading process, and consequently are becoming such efficient users of contextual cues that they can safely ignore some features of words, preventing a thorough internalisation of a word's correct spelling.

Peters (1985,12) suggests that "familiarity with serial probability will be derived mainly from reading experience." Since serial probability has been identified by researchers as important to the ability to spell, good contextual readers as opposed to visual readers, who take in every aspect of the word, can be poor or average spellers (Barnes, 1989).

Barron's (1980) research findings about children who differ in reading skill are consistent with the findings of Bryant and Bradley (1980) and concur with the writings of Frith (1980). Poor readers appear more likely than good readers to rely solely on a phonological strategy in spelling. Good readers on the other hand appear more likely to use both visual-orthographic and phonological strategies in spelling.

Barron (1980) suggests that in general, a phonological strategy in reading and a visual-orthographic strategy in spelling might be viewed as serving the function of providing back-up strategies when the visual-orthographic strategy fails in reading or the phonological strategy fails in spelling respectively. He argues that it is obvious that because of 'irregular' words and homophones which are unlikely to be spelled accurately by applying sound-to-spelling correspondences, an over-reliance on the phonological strategy is doomed to fail. Peters (1985) agrees and suggests that using solely a phonological strategy for spelling is a precarious approach. "Attending to the sound of a word can really only be helpful where a single letter corresponds with a phoneme eg. *bat* and even then there can be confusions with words like *was*" (Peters, 1985, 29).

Bryant and Bradley (1980) suggest that at least in the beginning stages there is a surprising degree of specialisation in the way in which a child uses cues. For reading, the child appears to use mainly visual and probably contextual cues and for spelling mainly phonological cues. In the case of experienced readers and spellers, this specialisation tends to decline in both ways and "they begin to read phonetically as well as visually and they use the memory of visual chunks to help them write

words" (Bryant and Bradley, 1980). However, Bryant and Bradley (1980) agree with Frith (1976) that poor spellers may continue to use mainly phonological cues for spelling.

Frith (1980) contends that poor spellers who are good readers spell differently from other poor spellers. The spellings of poor spellers/good readers are almost consistently phonetic. Frith (1980), Cohen (1980), Peters (1985) & Barnes (1989) state that these children rely primarily on phonological, surface-level information when spelling because they have not internalised information about underlying rules for spelling and they fail to use these rules when appropriate. Barron (1980) warns that too much emphasis by the teacher on one or other strategy may encourage children to over-rely on that particular strategy.

It is believed that poor spellers who are good readers would benefit from instruction designed to encourage the use of a variety of strategies in both reading and spelling rather than relying on strategies that are not efficient for the task. The proposed intervention study will, therefore, need to teach students not only about the ordering principles in the English spelling system - alphabetic, within-word pattern and meaning (Henderson & Templeton (1986) but the strategies, related to these principles - phonological, visual and morphological and how to apply that knowledge about spelling in the writing process.

3.62 POOR SPELLERS WITH A LEARNING DISABILITY

Barron (1980) argues that faulty instruction may not be the only reason why children do not use both visual-orthographic and phonological strategies in spelling. Other poor spellers present with misspellings a sizeable proportion of which are inconsistent and not phonetic. The researchers twenty-two years of teaching experience tends to show that some students in Year Six fail to progress past Henderson's (1985) Within-word Pattern Stage because their main strategy is a phonological one and that it may in fact be faulty. This problem is compounded if the student has a processing deficit. Some students eg. with average or above average intelligence, but with a learning disability, have difficulty processing information ie. taking in, remembering, and expressing information, because of a deficit in auditory, visual or

kinaesthetic modalities. As Peters (1985, 30) suggests "it is not the eyes and the ears but what goes on behind them that really affects spelling; the perceptual rather than the sensory mechanisms are decisive."

Before the work of the developmental theorists, educators attributed spelling errors to such things as poor sound discrimination and inadequate visual and sequential memory (Henderson and Templeton, 1986). While it is now known that many spelling mistakes are developmental and others are due to faulty teaching, it is important to remember that a certain number can be attributed to processing difficulties. Methods of teaching spelling should allow for students to process spelling via their best learning modality. Since correct spelling ultimately requires the exact reproduction of the word with all the elements in specific order, students should be encouraged to develop the type of visual or auditory image that will be clear enough to enable them to do this. Students need to be shown ways to compensate for their disability while at the same time endeavouring to build up skills in the area of deficit. (Marcel, 1980) contends that for students who have inadequate phonological representations, phonological techniques can hardly be expected to help. However, it has been argued that good spellers use a variety of strategies, why then should the student with a disability be penalised by having access to only some?

Frith (1980) suggests that students who consistently present with misspellings that are inconsistent and non phonetic would benefit from learning phoneme-to-grapheme rules and phoneme analysis. Idol (1988) advocates word study methods such as those recommended by Fernald (1943) which concentrate on the whole word and require careful pronunciation, visual memory, auditory and kinaesthetic reinforcement and systematic recall. Peters (1985) recommends directing the student's attention to the particular characteristics of the word form. The student needs to look at the word with great intent - with an intent to reproduce it as in magic slate activities. Teachers should expect students to correct their own mistakes by drawing attention to the 'hard spots' where they have gone wrong. As a consequence, students become accustomed to the probability of letter sequences occurring and hence gradually build up a bank of letter patterns from which they can generalise to the new words

they need to write. Idol (1988) suggests that teachers must experiment to find the recall/memory system that works best for each individual learner.

According to Templeton (1991) we should not uncritically ascribe to the learning-to-spell-is-like-learning-to-talk analogy. Read (1989) comments that the parallel between learning to spell and learning to talk is overstated. Virtually everyone learns to talk but research shows that not everyone learns to read, write or spell. Also while learning to talk may be natural, spelling is not.

It would appear that there is a percentage of students who require to be taught how to spell. These students could be divided into three groups - those with an intellectual disability, those with an average to above average intellectual ability but who have a learning difficulty and those who are average to good readers but poor spellers. The proposed intervention study will primarily direct its attention to the last two groups. It will not only have to provide instruction about the English spelling system and knowledge of a variety of strategies and how to use them in the writing process, but be aware of each student's preferred learning modality. In the case of students with processing difficulties, the study will need to provide instruction to show students how to compensate for their difficulty, while at the same time build up skills in the area of deficit.

3.7 EARLY INTERVENTION - SOME RESEARCH

The following well executed and reported studies tend to indicate that early intervention of a direct nature can improve the spelling of at-risk writers in the early primary years.

While many students will benefit from the practice of encouraging them to engage in writing with invented spelling, some authorities (Adams, 1990; Clay, 1991 & Cunningham & Cunningham, 1992) have expressed the concern that at-risk readers and writers in the early primary years will not learn enough from writing with invented spelling because of its indirect nature. With the whole language approach comes the debate whether to teach letter sound correspondences. This concern has led Clay (1985) and others to guide students' invented spelling in the early

stages to help them to achieve phonemic abilities they might not otherwise develop.

Clay (1985) suggests that the children in the beginning stages be encouraged to listen for the sounds in words. Cunningham and Cunningham (1992) have applied some of the principles of Clay's individual Reading Recovery Method to a group setting in an endeavour to enhance the benefits of writing with invented spelling. Their spelling instructional strategy called Making Words is, they believe, "a powerful activity because within one instructional format there are endless possibilities for discovering how our alphabetic system works" (Cunningham & Cunningham, 1992, 112). They stress that Making Words should not be used instead of writing with invented spelling but along with it and that it is but one component of a multi method, multilevel approach to reading and writing. According to Cunningham & Cunningham (1992), the results in the classrooms where Making Words and invented spelling in writing are being used side by side are encouraging. They believe that the students who lack phonemic awareness seem to develop that awareness through participation in the lessons.

"Phonemic awareness is known to play an important role in the acquisition of alphabetic writing systems" (Treiman, 1991, 346). Treiman's research points to the connection between children's difficulty in analysing initial clusters into phonemes and their spelling of those clusters. Treiman (1991) concurs with Schlagal (1989) that without explicit phonemic-awareness training, spelling errors related to the initial consonant clusters in words do decline over time. However, she adds that this realisation comes slowly for some children and that the difficulty can continue up to third grade. She therefore suggests that such difficulties might be at least partially alleviated through phonemic awareness training.

In the research of Foorman, Frances, Novy & Liberman (1991) the skill that appears to enter into a bi-directional relationship with phonemic segmentation is spelling. The authors concluded that children who received "more letter-sound instruction" had developed knowledge of orthographic strategies, whereas children who received "less letter-sound

instruction" were still developing alphabetic strategies. An unplanned-for finding by Foorman, Francis, Novy & Liberman (1991, 467) was that many of the children who "practised segmenting projected words into syllables and then into phonemes before writing the word from memory" made gains in their accuracy of words with exceptional spelling patterns.

The above research holds promise for direct intervention, as proposed in the intervention study, for older poor spellers who have not 'caught' spelling in the interface between reading and writing. The work of Cunningham & Cunningham (1992) indicates success in blending aspects of systematic instruction and whole language as is proposed for the intervention study.

3.8 BASELINE FOR INSTRUCTION

In order for generative learning to occur, the students in the proposed intervention study will need to be optimally placed for instruction. Research is showing that an accurate assessment of an individual's spelling ability can establish a baseline for instruction. However it is not a simple matter of establishing the percentage of words correct on a spelling test or looking at which words are spelt incorrectly. As Bolton and Snowball (1985) warn, it is important for teachers to be aware that errors may be due to the student's development and limited exposure to words rather than an inability to spell.

Anstey and Bull (1984) and other developmental theorists contend that it is easier to understand students' mistakes and act upon them if a teacher is familiar with the stages of development. The stages of spelling competence or knowledge predict errors that pupils will make and that an understanding and interpretation of such errors will allow the teacher to determine what particular word features pupils need to study if they are to advance in spelling competence (Bolton and Snowball, 1985 and Henderson & Templeton, 1986).

However, Bean & Bouffler (1987b) argue that while the developmental stages provide a reasonable basis for assessing learner development and building classroom writing/spelling programs, they are limited. They contend that while the stages provide some information

about what students are doing, there is much valuable information about each individual student that remains unexplained. Anstey & Bull (1984), Bouffler (1983), Hepburn (1991) & Jenkins (1986) have devised ways of analysing students' errors and/or examining the strategies the students use to spell.

Bouffler (1983) proposes that there are a number of language strategies that students use to spell. She categorises these strategies as follows:-

- . Spelling as it sounds. This is phonetic spelling eg. *krpit / carpet*.
- . Spelling as it sounds out. This is an exaggerated sounding out of phonetic features eg. *antcer/ answer*.
- . Spelling as it articulates. This is a characteristic among beginning writers eg. *bodm/ bottom*.
- . Spelling as it means. Word meanings are sought as a reference point for spelling eg. *Wheatbics/ Weet Bix*.
- . Spelling as it looks. In using the technique of visual recall, some students write alternative forms of the word eg. *directoin/ direction*.
- . Spelling by analogy eg. *sumtimes/ sometimes*.
- . Spelling by linguistic context. The spelling of words (*envelope*) may affect the spelling of words (*eny*) in later parts of the writing.
- . Spelling by reference to an authority (referral to dictionary, teacher etc.)
- . Opting for an alternative structure. The student avoids the use of the word.
- . Spelling by being indeterminate. In some instances, handwriting that is difficult to read will hide errors.

Hepburn (1991) proposes a system of categorising spelling errors which enable teachers to:-

- . Identify the specific type of errors the child is making.
- . Focus on common errors and
- . Devise strategies specifically catering to the problems.

Anstey & Bull (1984) have also devised a way of categorising students' spelling mistakes. Where Bouffler's (1983) categorisation system seems to focus on strategies, the systems of Anstey & Bull (1984) and Hepburn (1991) list possible causes for types of mistakes and seem to combine both skills (an error made by doubling a consonant) and strategies (poor visual recall - spelling as it looks).

In her research, Jenkins (1986) developed a Spelling Miscue Analysis to both analyse and monitor a child's spelling progress through periodic examinations of real pieces of writing. "Children's writing reveals their understanding about words and their application of what they know about spelling. Writing over a period of time shows which words children use most, which words they consistently remember and where they are having difficulties" (Turner, 1984, 2).

However, the researcher's twenty-two years of teaching experience tends to show that it can be difficult to gather enough information to obtain a clear picture about how a student spells. Some students are reluctant to write and so a study of their writing reveals very little. Experience also tends to show that still other students are so busy with the many other demands involved in the complex process of writing that little time and energy can be devoted to spelling. Since conventional spelling is de-emphasised in the process writing approach, to allow more time for thinking about structure etc., the spelling tends to become 'careless' and may not be a true indication of what the student can do. Therefore, other means of examining what a student can do in spelling may be required to enable a more accurate diagnosis.

Use of Schlagal's (1989) qualitative developmental spelling inventory would therefore be a useful tool when analysing spelling errors of children, particularly reluctant writers, and would allow the teacher to monitor the word knowledge of each student and provide tangible evidence of spelling growth. Kemp (1983) provides a variety of ways of studying the children's errors in spelling. As well as assessing spelling in expressive writing, he lists dictation (seen and unseen), proof-reading [a group of tests titled Proof-Reading Tests of Spelling (PRETOS) compiled by Croft, Gilmore, Reid and Jackson (1981)], modified cloze and cloze procedures.

"By analysing spelling errors and observing reading and writing behaviours over time, the teacher will be in a position to make diagnostic decisions about the developing competencies of his/her individual students" (Bear and Barone, 1989, 291). It is not only important to know about the individual student's stage of spelling development; to understand the spelling mistakes the student makes and the strategies he/she uses; but this information should be acted upon. Assessment, planning and teaching should be closely linked.

The Spelling Developmental Continuum of the Education Department of Western Australia (1994) provides a means whereby teachers can predict where students are on the Continuum by looking at Key Indicators. It provides information on how teachers can collect data to confirm their predictions. It provides ways of linking assessment with teaching by referring to major teaching emphases. Ways of monitoring progress are also discussed.

Attention to the individual student's needs is clearly a natural and necessary consequence of developmental spelling theory. However, a total individualisation of instruction would mean that the teacher's time would be thinly spread (Henderson, 1985). Individualised instruction can indeed be a nightmare for teachers. One compromise answer lies in the creative use of groups and learning centres. Heilman, Blair & Rupley (1990) suggest that to prevent classroom management problems students should be grouped for instruction in no more than three groups. Bear & Barone (1989) suggest a way of providing for individual differences in ability/ achievement. They have developed an informal spelling

assessment based on Schlagal's (1982) qualitative spelling inventory and incorporating Henderson's (1985) five stages of spelling and word knowledge. Bear & Barone (1989) suggest that the assessment, if interpreted developmentally, can assist the teacher in grouping the children for word study. They suggest differential instruction for the children functioning at the various developmental levels. Bolton and Snowball (1986) suggest a balanced spelling program in which the teacher works with individuals and/or groups according to their needs in personal writing, and plans specific class or group activities that highlight aspects of English orthography and focus on spelling strategies. The Education Department of Western Australia (1994) suggests that key teaching strategies identified for each developmental level can be used to meet the needs of a whole class, small groups and individual students.

It has already been noted that, in the proposed intervention study, Henderson's (1985) stages of spelling development will be used to initially place students for instruction because it is felt that this particular categorisation is descriptive and also offers suggestions for instruction at each level. Heeding the warnings of Bouffler (1983) and others, it will be necessary for the study to diagnose further to identify the idiosyncrasies of each individual student's spelling. It is believed that Bouffler's (1983) categorisation of use of strategies would be time consuming. A compromise is therefore proposed. The study will seek to identify the student's use of phonological, visual or morphological strategies. Such categorisation aligns with Henderson's (1985) ordering principles of English spelling. It will also seek to identify the student's use of particular skills eg. rules for doubling consonants. In the study, assessment, planning, instruction and monitoring will be closely linked. Primarily students will be grouped for instruction according to their needs, but at times instruction may be given to meet the needs of the whole class or individual students.

3.9 METACOGNITION

It has been argued, earlier in this chapter, that direct instruction in the study of words plays a critical role in the development of word knowledge and spelling. However, although Bloodgood (1991) argues that an integrated language arts program of reading writing and word

study will allow students to apply that knowledge learned in word study to reading and writing tasks, there is evidence in the literature to support the fact that not all children eg. the problem spellers will make this transfer. Marzano, Brandt, Hughes, Jones, Presseisen, Rankin & Suhor (1988) contend that students may have the knowledge but that they often do not know exactly when it needs to be applied. Bryant and Bradley (1980) indicate that students need to shown what they can do. Jenkins (1986) points out a common misconception about language learning that the conventions of language can be learned and practised in isolation and then integrated into where they are actually required at a later date. Therefore, integrating devices are necessary.

As Johnson (1989) suggests, we need to set all students up for success in spelling. The extensive work of Kemp (1987) and Clay (1985) provide teachers with ways of gaining an insight into the reading processes of students together with ways of training students in strategies to access meaning from print. What is needed to be done in the intervention study is to supply all students with strategies which will help them to help themselves not only in reading but with spelling as well. Wilde (1990) suggests that helping students to develop spelling strategies can be a valuable part of the spelling curriculum.

Wilde (1990) adds that this instruction should be accompanied by regular discussions of how one decides how a word might be spelled. Marcel (1980, 400 -401) concurs that more importance should be placed on the "linguistic awareness and phenomenal consciousness in the acquisition of spelling." Many students have skills and strategies available but they need to be encouraged to actively use them. It is proposed, therefore, that developing student's metacognitive skills may provide teachers with the integrating device needed for students to transfer the knowledge gained in word study to where and when it is needed in spelling words in real writing situations.

Block and Peskowitz (1990, 152) contend that "metacognition, defined as knowing what one knows and does not know and more generally being aware of one's state of knowledge, ought to be influential when trying to spell words. Metacognition should affect judgments of how difficult a word will be to spell or how likely a rendered spelling is to

be correct." They state that attempting to spell is probably accompanied by an awareness or feeling based on how much of the word is definitely known versus how much must be constructed, but more importantly an awareness of whether strategies are available to spell the unknown parts. In real-life spelling these judgments are probably made both before and after a spelling is written. What the writer says or thinks during self-checking probably affects the cognitive process of checking, either its essential nature or the information called on. "The main instructional implication is that such knowledge could undoubtedly be better developed as well as acquired by more students if teachers gave explicit instruction in metacognitive spelling strategies" (Block and Peskowitz, 1990, 162).

Wong's (1986) exploratory research, although promising, and in need of replication through more formal research, adds weight to Block and Peskowitz's (1990) argument. Wong (1986) stresses that spelling instruction should include the teaching of strategies designed to elicit the students' knowledge of words (phonemic, orthographic, syntactic and semantic knowledge) together with strategies that cue students to check the adequacy of their applications of such knowledge. In short, spelling strategies are necessary to activate spellers' schemata of words and to prompt them to check on accuracy. Wong, however, cautions that it is not enough to teach the children strategies. The strategies need to be backed up by domain specific knowledge eg. the structural components of words. She draws attention to Gerber's (1982) work. Gerber's (1982) failure to obtain improvement in spelling accuracy among older learning disabled students tends to highlight the fact that spelling strategies alone do not ensure accuracy.

Block and Peskowitz (1990) suggest that research is needed to describe the kinds of strategies students actually devise. One way to gain insight into the range of strategies that children utilise is to interview them about how they spell words. Interviews have been suggested by Palinscar & Brown, 1989; Radebaugh, 1985 and Rule, 1982. Another way to identify strategies students use, suggested by Block and Peskowitz (1990), is to develop a list of potentially applicable strategies and then ask the students to examine words to which the strategies logically apply. Johnson (1989) suggests that at the beginning of each year it is beneficial to develop a questionnaire in order to gain knowledge about the attitudes of the

children and the strategies they are familiar with. Research might also lead to the identification of different organisations of spelling words rather than the semantic, phonological and visual orthographic organisations suggested in Block and Peskowitz (1990) study.

The proposed intervention study will need to pay more attention to the "how" than the "what" in spelling. It will need to learn more about the cognitive state of the learners; what spelling strategies they are currently using; how it can improve and increase their repertoire; and most importantly how it can explicitly transfer the learning about spelling to where it is needed in writing. However, what is taught and how it is taught must be explicitly matched to the individual learner's current stage of development and idiosyncratic needs.

3.10 SUMMARY

This chapter looked at both sides of the "incidental versus systematic" controversy and argued that somewhere between the two extremes a sensible balance exists for most students. A balance involving word study was proposed and ways of deciding on baselines and groupings for instruction were offered. Finally, training in the metacognitive aspects of spelling was proposed as a way of ensuring that students transfer knowledge of spelling to where it is required in writing.

What may be termed an evolutionary model of spelling instruction (Refer to Appendix B) is proposed for the intervention study to cater for the needs of the students who do not catch spelling either through a traditional approach or a whole language approach. Whole language will not by itself enable all students to spell. On the other hand, direct teaching of skills or strategies cannot stand alone. Together, however, they offer promise. This does not mean haphazardly combining the two approaches, but rather a careful blending of what has been shown to work.

Spelling should no longer be treated as an isolated subject, but should be seen at the interface between writing and reading. However, formal instruction as well as informal instruction has been shown as important if not critical. Specific time should be allocated to word study to give the students time to develop an awareness of the regularity of the

system. Students should be placed and grouped for word study according to their stage of development and/or particular need eg. over-emphasis on a phonological strategy or a visual sequential memory deficit. The need for training in the metacognitive aspects of spelling has been recognised. It has been argued that not all students recognise opportunities to transfer learning. It is proposed, therefore, that the transfer of spelling strategies to where they are needed in the writing process be taught explicitly. Such metacognitive skills training would again need to take into account a student's level of development and particular needs.

Block and Peskowitz (1990) suggest that research is needed to describe the kinds of strategies that students actually devise. Formal research is also needed to investigate whether explicit instruction in both domain specific knowledge and metacognitive strategies would together enable all students to transfer spelling knowledge to where it is required in writing. A review of recent research on metacognition is therefore required (see Chapter 4) to investigate how the findings in this field can be applied to spelling instruction /learning.

To enable the findings of such research to be applied in real classroom situations, the research would need to take into account the complex nature of the classroom while at the same time being aware of the possible threats to reliability, validity and generalisability. In an effort to solve this dilemma and to increase the confidence of the findings, it is proposed that a combination of both quantitative and qualitative data collection methods (triangulation) be used.

CHAPTER 4 METACOGNITION - DEFINITIONS
& RELATED CONCEPTS

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CHAPTER 4

METACOGNITION - DEFINITIONS & RELATED CONCEPTS

4.1 INTRODUCTION

Teachers have long been aware of students' lack of success of applying what they were taught in the resource room to the regular classroom and in generalising those skills from one task to another (Sheinker, Sheinker & Stevens, 1984). Although the aim of early cognitive skill training research was the generalisation of skills, it has been repeatedly demonstrated that many students with significant learning problems who have participated in strategy training programs did not maintain or generalise the use of the learned strategies (Brown et al 1983 ; Palmer & Goetz, 1988). As Reeve & Brown (1985) explain, the lack of transfer effect was due in part to the adoption of rigorous methodological requirements which necessitated the use of blind training studies in which subjects had to be kept blind to the purposes of the interventions. Consequently, students were not helped to understand the significance of the activities. Furthermore training focused on task-specific skills. Under such conditions transfer of skill did occur , but only on tasks that were essentially the same, or very similar to those on which training had taken place (Reeve & Brown, 1985).

Reeve & Brown (1985) indicate that a major breakthrough in cognitive skill training research occurred in the mid-1970s when researchers not only recognised the importance of informing subjects about the purposes of the training but also recognised the importance of training task general skills such as planning, monitoring and checking

(metacognitive skills). In contrast to previous studies, those studies incorporating metacognitive training components provide durable and generalisable improvement in performance (Cole & Chan, 1990; Derry & Murphy, 1986; Perkins, Jay & Tishman, 1993; Reeve & Brown, 1985). As Cole & Chan (1990, 283) note, "cognitive and metacognitive instruction in special education has been employed to reduce impulsivity, increase on-task behaviour, improve performance in reading, mathematics and writing, change students' causal attributions, develop ability to cope with failure, promote motivation and improve interpersonal skills." In general, research findings indicate that students with special needs can be taught to use strategies and their task performance can be improved significantly as a result. It is for this reason that the proposed intervention study advocates training in the metacognitive aspects of spelling as a way of ensuring that students transfer knowledge of spelling to where it is required in writing.

In this chapter, the cognitive view as opposed to the behaviourist view of instruction is examined. A commonality in the already existing definitions of metacognition is sought and the components of metacognition are described. The interactive and cumulative nature of the metacognitive, cognitive and motivational process is examined. The deficiencies in immature and less efficient learners are also discussed.

4.2 COGNITION AND INSTRUCTION

Behaviourist practices in education are being replaced by cognitively oriented methods. As the previous chapter on spelling indicates, with the advent of whole language, process writing, and developmental spelling movements, literacy instruction has shifted its focus from an over-emphasis on content to examining the inter-relationship of process and content. Knowing *how* has become as important as knowing *what*. "Research into cognitive strategies and cognitive strategy instruction has developed into an important interest area for educators. The study of metacognition is embedded within this context " (Shortland-Jones, 1988, 225).

The recognition that learners may become aware of and exert control over, their learning processes is certainly not a new idea in

psychology. As Biggs (1991) notes, the ancient Greeks saw it as educationally important to know oneself. James (1899, 26) discussed "elements of the mental machine and their workings" and at the beginning of this century, Dewey (1902, 9) talked of learning involving "reaching out of one's mind" and of "organic assimilation from within."

Despite this, during the first half of this century, the behaviourist movement dominated psychology and education, but as cognitive theory matured during the 1970s and 1980s, educational psychology experienced a transition from behavioural psychology to cognitive psychology and subsequently the view of learning and instruction changed in ways that affected educational practice and research (Mayer 1992 a,b).

Mayer (1992, b) states that, according to the cognitive approach to instruction, the learner is no longer viewed as a passive recipient but as an active learner with metacognitive skills for controlling his or her cognitive processes during learning. Rather than instruction comprising largely drill and practice components, instruction is geared toward helping the learner to develop learning and thinking strategies that are appropriate for working within various subject domains. From the behaviourist perspective, evaluation was typically quantitative since the goal of instruction was to increase the number (or strength) of correct behaviours in the learner's repertoire. On the other hand, evaluation from a cognitive perspective is typically qualitative and seeks to determine how the student structures and processes knowledge (Mayer, 1992 b).

The active role ascribed to the individual is a major characteristic of the cognitive position. "Within a cognitive framework, behaviour is the outcome of a variety of mental events and processes, some of which are postulated to be under an individual's control " (Reeve & Brown, 1985, 344). While the term *cognition* refers to a the broad set of mental processes/capabilities that make possible the intellectual functioning of individuals (Rowe, 1988), the term *metacognition* , according to Reeve and Brown (1985), has generally been used to refer to individuals' ability to be aware of, to understand and to manipulate their own cognitive processes.

4.3 METACOGNITION - TOWARDS A DEFINITION

Although metacognition is a major focus in the theory, research and practice of teaching thinking, the term is not easily described or defined. In a literal sense, the term metacognition means "transcending knowledge." Flavell (1976, 232) who is frequently credited with the rediscovery of the notion of metacognition, defines it as "one's knowledge concerning one's cognitive processes and products or anything related to them. " Within this definition he also sees a controlling and monitoring factor which enables an individual to orchestrate how a problem will be approached and solved.

Definitions of metacognition in the literature (Ambruster, Echols & Brown, 1983; Anstey, 1988; Brown et al, 1983; Cole & Chan, 1990; Costa & Lowrey, 1989; Lawson, 1991, Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, & Suhor, 1988; Swartz & Perkins, 1990; Reeve & Brown, 1985; Rowe, 1988) tend to refer commonly to two types of cognitive activities as 1. the knowledge an individual has of certain cognitive processes, restrictions, strategies etc., in self and others; and 2. the individual's ability to monitor, direct and control those processes, including knowing when and where to apply certain skills, rules or knowledge. This second component is a management or control component and is often referred to as an executive process. As Lawson (1991) notes, these two components of metacognition are closely related. As we reflect on the course of cognitive activity, and on the effects of that activity, we can build up knowledge of how we can best proceed with certain tasks, such as which tasks are easier to do.

An important issue that needs to be considered in reference to metacognition is that of the conscious self- regulation of thought. Although conscious control is often implied in the various definitions of metacognitive activity, Reeve & Brown (1985) argue that this important issue is largely ignored by researchers. Cole & Chan (1990, 261) appropriately define metacognition " as conscious knowledge and control of our own cognition."

When students are not aware (conscious) of how they go about tasks, they cannot formalise or generalise the skills they have

acquired. Without such generalisation their thinking is restricted to reacting to discrete tasks in specific situations.

(Rowe, 1988, 228).

Another important issue that is frequently mentioned in the literature is that of the relationship between motivational factors and metacognitive processes (Ambruster, Echols & Brown, 1983; Borkowski, Weyhing and Turner, 1986; Evans, 1991; Kurtz & Borkowski, 1984; Marzano et al, 1988; McCombs, 1988; Palmer & Goetz, 1988; Reeve & Brown, 1985; Resnick & Klopfer, 1989; Rowe, 1988; and Wittrock, 1988). As Reeve & Brown (1985, 351) note, "while nothing succeeds like success - nothing fails like failure."

4.4 THE COMPONENTS OF METACOGNITION

The components of metacognition are described in many ways in the literature. Ambruster, Echols & Brown (1983) stress the knowledge about four variables - text (with respect to reading), task, strategies and learner characteristics and the manner in which they interact to produce learning. Borkowski, Weyhing & Turner (1986) emphasise the interacting nature of specific strategy knowledge, metacognitive acquisition procedures and general strategy knowledge. The description used in the proposed spelling and metacognitive strategies study, will be in accord with the view of Marzano et al (1988) that metacognition involves two primary aspects: knowledge and control of self and knowledge and control of the process. It is argued that such a view incorporates both the aspects of conscious control and motivational variables which are considered necessary if students are to maintain and generalise the use of strategies learned in training.

It is pertinent at this point to discuss the term *strategy* as in the literature there appear to be slight variations in the definition of the term. Some tend to refer to a *learning strategy* as an overall plan (Derry & Murphy, 1986; Garner, 1988). Many researchers, as Derry & Murphy (1986, 2) note, use the terms *task-specific strategy* or simply *strategy* to describe what they prefer to call a *tactic*, a more specific skill used in the service of a *strategy* . Others (Ellis & Lenz, 1987; Palinscar, 1986) tend to use the term interchangeably. It is argued that the slight difference in the uses of the term is not of significance. What is of importance is that if strategy

instruction is to influence how the learner interacts with the learning situation, the overall plan must contain task specific cognitive strategies directly relevant to the specific task together with specific metacognitive strategies to control and monitor the plan (Cole & Chan; Ellis & Lenz, 1987; Palinscar, 1986). For the purpose of the proposed intervention study, and in order to conform with the use of the term *strategy* in the literature on spelling, the term *strategy* will refer to both an overall plan and/or a *tactic*.

4.41 KNOWLEDGE AND CONTROL OF SELF

Intuitively, most teachers recognise that the students' willingness to try academic tasks is a major determinant of their success. Students do not do well if they do not try, regardless of the quality of the lessons or the materials (Marzano et al, 1988). It is clearly evident in the literature on metacognition, that skills and attitude are inseparable. " In order for learners to accept responsibility for their own learning, they must be motivated as well as possess the skills and abilities to actively engage appropriate metacognitive, cognitive and affective (motivational) strategies" (McCombs, 1988, 142).

In general, beliefs that attribute success to effort and failure to a lack of effort are likely to promote strategic behaviour (Borkowski, Weyhing and Turner (1986). Less efficient learners tend to attribute failure to uncontrollable external causes such as teacher bias, bad luck or their own lack of ability. As Borkowski, Weyhing & Turner (1986) suggest, failure-oriented learners frequently not only attribute their errors to their lack of ability, but often view temporary failure as an indication of a stable, generalised incompetence. Kurtz & Borkowski (1984) concur that children's attributions about the causes for their successes and failures are closely tied to future expectations. Expectations influence the amount of effort a student will expend on a task as well as the quality and durability of responses to ensuring success or failure experiences.

Although a student may be able to apply a particular strategy, he/she may choose not to do so (Garner, 1988). The student may not be willing to commit the time and effort needed if the new strategy is perceived as burdensome. If a student perceives that a certain strategy

requires a great deal of content related knowledge and he/she sees that he/she doesn't have that knowledge, he/she may be less likely to employ this strategy when difficulties are encountered (Palmer & Goetz, 1988). Furthermore, the student may not be inclined to invest cognitive and effective effort unless the new strategy is seen to be intelligible, plausible and fruitful (Cranstone & Baird, 1988).

Evans (1991) advocates that the amount of effort a student is able and willing to exert in attempting to attain a goal, particularly one requiring complex performances, would be enhanced by positive control beliefs. As Resnick & Klopfer (1989) suggest, motivation for effortful activity must be viewed as an integral part of instruction in the proposed spelling and metacognitive strategies study.

4.42 KNOWLEDGE AND CONTROL OF PROCESS

Marzano et al (1988) indicate two important elements with respect to knowledge and control of process: types of knowledge important in metacognition and the executive control of behaviour.

Types of Knowledge Important in Metacognition

Declarative knowledge is factual - It is knowing the *what*. According to Evans (1991), declarative knowledge is knowledge which is not implicit in action, but which may be actually declared eg. a student may be able to speak of the Latin root "porto" but may not use this concept in assisting him/her to spell the word "deportment". Bransford & Vye (1989) suggest that learning involves a transition from factual or declarative knowledge to procedural or use-oriented knowledge. A transition is required from "knowing what" to "knowing how".

Procedural knowledge includes information about the various actions that must be performed in a task. It is knowing *how* eg. a student's procedural knowledge might include knowing how to break a word into syllables. However, having such knowledge is no guarantee that the student will be able to successfully use this process when necessary to assist in the spelling of a word. Nor is the reverse necessarily true (Evans, 1991). As students transform declarative into procedural knowledge, they learn

not only what is important but also when to do the right thing. If they don't know when to apply principles, concepts, and strategies, their knowledge remains inert (Bransford & Vye, 1989). Ambruster, Echols and Brown (1983) report of students 'blindly' using a technique/process when they do not have the metacognitive skills to use the technique/process strategically.

Conditional knowledge refers to knowing *why* a given strategy works or *when* to use one skill or strategy as opposed to another (Marzano et al, 1988). To exert metacognitive control over a process, students must know what facts and concepts are necessary for the task; which strategies, or procedures are appropriate (conditional knowledge); and how to apply the selected strategy or procedure (Marzano et al, 1988). When students are not aware of how and when and where to go about tasks, they cannot formalise or generalise the skills they have acquired. Without such generalisation as Rowe (1988) suggests, their thinking is restricted to reacting to discrete tasks in specific situations. As was postulated in the previous chapter on spelling, students often achieve well on the weekly Quota (a textbook approach to the teaching of spelling) spelling tests, but the skills learned are not necessarily used in writing situations.

According to Bransford & Vye (1989) a teacher cannot simply "transmit" to students the secrets of expertise. This does not mean that information provided by teachers and texts is unimportant. However, as the research of Paris (1988) and Rabinowitz, Freeman & Cohen (1992) suggests, the proposed intervention study will need to explicitly inform students about the *how*, *when*, and *why* to use spelling strategies (conditional and procedural knowledge) and *when* and *why* the spelling strategies are helpful and /or important and *how* the spelling strategies can be applied beyond the word study lessons and into real writing situations. Otherwise the information may remain "inert". Furthermore the study will need to provide the students with opportunities to use the information until the teacher is sure that the students can do so without prompting (Bransford & Vye, 1989).

Executive Control of Behaviour

Maintaining executive control, the second aspect of metacognition related to process, involves planning, regulation and evaluation. Planning involves deliberately selecting strategies to fulfil specific goals and regulation involves checking one's progress toward the goals and subgoals identified. Evaluation includes assessing one's current knowledge state. (Marzano et al, 1988). Evans (1991) proposes that these executive procedures or management procedures are continually applied in learning in action. The student needs to be able to consciously access and monitor his/her own thinking with a degree of detachment; to be able to not only monitor his/her own thinking as he/she does a task, but to take control and regulate or adjust his/her thinking and action if appropriate (Anstey, 1988). The student needs to be able to realise that the strategy selected is the most appropriate one, rather than simply proceeding and completing the task poorly (or failing to complete the task) through use of an inappropriate strategy (Anstey, 1988).

Costa & Lowrey (1989) suggest that students be encouraged to think of a task as having before during and after components. In the proposed intervention study, the students will need to be encouraged to think about and reflect on their thinking on each occasion when the spelling of a word is not automatic. Before writing a word they will need to think about the strategies that are available to them to assist with the spelling of the particular word. As they are writing they will need to think about whether the word is "feeling " or "looking right". After the word is written, they will need to consider whether the word is correct or not. If the word is not correct then they will need to focus on the part that they feel is incorrect and begin the process again. Although the model should not be applied mechanically, students can come to see that planning, regulating, evaluating and revising take place at each stage (Marzano et al, 1988). The aim of the study would be for the students to develop "conscious control" of their metacognitive processes, since, as Brown (1982) and Brown & DeLoache (1978) argue it is the students' increasing ability to gain conscious control of the metacognitive processes that determines their growth of problem solving skills.

Although Marzano et al (1988) have, for the purposes of analysis, separated self-knowledge and self control from knowledge and control of process, they stress that the components are not separate in practice.

When students are exerting metacognitive control over process, they are also exerting self-control. While they plan, regulate and evaluate (before, during and after a task) they may also be monitoring and controlling motivational states (Marzano et al, 1988). This is an important concept to be noted in relation to the proposed intervention study. Each time the students move through the process of spelling an unfamiliar word they will either have feelings of satisfaction ("I can do it.") or frustration ("I am hopeless."). As either of the feelings of satisfaction or frustration can have a cumulative effect, it will be imperative for the teacher to program for student success and satisfaction. One way of doing this is to tick the parts that are correct instead of marking the spelling wrong. This not only gives students a feeling of partial achievement as opposed to failure but by focusing on the part that is incorrect, it aides self-correction which leads to personal satisfaction.

Although Borkowski, Weyhing & Turner (1986) describe the central components of metacognition slightly differently, they would concur that the components of metacognition are operative in each instance of complex learning encountered by the student and can best be understood (and researched) from an interactive perspective. They stress that such an approach is necessary so that cognitive functioning and the personality-motivational system are not separated.

Kurtz & Borkowski (1984); McCombs, (1988) describe the interactive nature of motivational and cognitive processes. Metacognitive knowledge about the value of strategies and the corresponding beliefs about mental functioning influence, for good or ill, self-initiative, performance and self-esteem (Kurtz & Borkowski, 1984).

Cranstone & Baird (1988) who believe that there is obvious similarity between constructivism and metacognition, explain this same process from a constructivist point of view. They suggest that according to the findings of research into constructivism, effective teaching must provide learners with opportunities to recognise and evaluate existing ideas and beliefs, and then to build on or reconstruct these ideas and beliefs.

McCombs (1988) postulates, that once generalised perceptions of competency and positive self-control have been developed, students will be more inclined to learn and use other metacognitive, cognitive and affective strategies. However, the intervention study will need to consider what factors affect the development of these metacognitive activities, since there is research that indicates that while most students use the aspects of metacognition automatically, these seemingly simple and automatic abilities may be incomplete or inaccurate among immature and/or less efficient learners.

4.5 IMMATURE LEARNERS AND LESS EFFICIENT LEARNERS

There is some indication that deficiencies in the knowledge and use of metacognitive skills may be related to any array of factors including:-

- . Age (Borkowski, Weyhing & Turner, 1986; Kurtz & Borkowski, 1984). Flavell (1981) argues that young children may understand that a problem calls for action but be unable to effect a problem-solving routine; that is they have "metacognitive experiences" but are unable to interpret those experiences.
- . Cognitive deficiencies/proficiency in learning (Ambruster, Echols & Brown, 1983; Borkowski, Weyhing & Turner, 1986; Wong, 1985).
- . An inherent passivity in learning; disabled students' approach to academic tasks (Cole & Chan, 1990; Das, 1985; Wong, 1982).
- . Limited experiences with strategy based learning (Ashman & Conway, 1988; Borkowski, Weyhing & Turner, 1986; Hall, 1980; Harth, 1982; Meichenbaum, 1983; Sheinker, Sheinker & Stevens, 1984).

Deficits in metacognitive knowledge and or control, according to researchers into metacognition contribute to problems in strategy generalisation/transfer (Borkowski, Weyhing & Turner, 1986; Cole & Chan, 1990; Das, 1985; Kurtz & Borkowski, 1984; Meichenbaum, 1983; Sheinker, Sheinker & Stevens, 1984; Wong, 1982) and strategy invention.

(Borkowski, Weyhing & Turner, 1986). As has been explained, closely related to these metacognitive knowledge and control factors are motivational problems. Immature and less efficient learners tend to attribute failures to uncontrollable external causes such as their lack of ability, teacher bias, ease (or difficulty) of the task or bad luck (Cole & Chan, 1990). Borkowski, Weyhing & Turner (1986) add that it is possible that metacognitive skills may to some degree be task dependent. A student may be able to evaluate, plan and regulate his/her processes during the task of reading, but fail to do this during the task of spelling in a real writing situation.

Another, albeit tentative, conclusion about metacognitive development made by Ambruster, Echols & Brown (1983) is that knowledge precedes control. It seems that learners must have knowledge of the process involved and their own characteristics as learners, before they can strategically control the learning process to optimise the influence of these factors.

Ambruster, Echols & Brown, 1983 believe that it is certain that students can be made aware of the influence on learning of the characteristics of the process and their own selves as learners. Metacognitive knowledge of this sort can enable students to become more effective learners. The proposed intervention study will firstly then, need to devise ways of making all students aware :- of the strategies that can assist them with spelling in a variety of situations (when learning to spell new words, when involved in writing and when proof reading to check accuracy); of their attitude towards themselves and their ability as spellers; and that by using a multi strategy approach their spelling ability should improve.

4.6 SUMMARY

This chapter sought to define the term metacognition and related concepts. The reasons why not all learners use the knowledge and control aspects of metacognition automatically were also examined.

It was found that definitions of metacognition in the literature refer commonly to two components:- knowledge and control of self and

knowledge and control of process. There are two elements within the knowledge and control of process:- declarative, procedural and conditional knowledge and the conscious control of the process which entails, planning, regulation and evaluation. The components of metacognition can best be understood from an interactive perspective. It is also believed that the cognitive functioning and personality-motivational system should be closely linked. The intervention study will therefore, need to incorporate attributional training into strategy training in order to develop positive control beliefs (Borkowski, Weyhing & Turner, 1986; & Evans, 1991).

Although the research offers reasons why some students do not routinely involve themselves in appropriate cognitive processing to facilitate problem solving, Ambruster, Echols & Brown (1983) believe that students can be made aware of the characteristics of both the process and themselves as learners, and that this cognitive knowledge will enable them to become more effective learners. Cole & Chan (1990) indicate that some students are often unaware of the appropriate cognitive strategies to assist them in solving the problem and they often blame their poor task performance on external causes such as teacher bias or lack of ability. The first step, for the intervention study would therefore be to make these students aware of appropriate spelling strategies and the fact that by using a multi strategy approach to their spelling their spelling ability will improve. As Ambruster, Echols & Brown (1983) indicate, knowledge precedes control.