SUNY COLLEGE AT BROCKPORT

THE EFFECTS OF DETAILED VISUAL ANALYSIS

OF WORDS USING MAGNETIC LETTERS FOR REMEDIAL

READING STUDENTS IN THE FIRST GRADE

By

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ABSTRACT

The purpose of this study was to determine if a detailed analysis of words using magnetic letters during instructional lessons with first grade remedial reading students would improve word recognition.

The eight subjects were first grade males and females in the Chapter 1 Remedial Reading Program in a Western New York State suburban school district. The subjects received instruction introducing new vocabulary sight words. The lessons for the acquisition of these new words incorporated the use of magnetic letters for every other new word introduced. The subjects completed a pre-test to determine if the new word was known by the student prior to instruction. A post-test was also administered following instruction to ascertain the acquisition of the new word.

This study shows an effective model for teachers to help students learn a technique and process for learning new words. It also helps in the design of effective lessons for the acquisition of new words for young readers. The results of this study showed no statistically significant word recognition improvement from lessons including a detailed analysis of the graphemes of words using magnetic letters.

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CHAPTER I

Statement of the Problem

Purpose

The purpose of this study was to determine if a detailed visual analysis of the graphemes of words while manipulating magnetic letters can improve word recognition.

Need for the Study

The philosophical shift from segregated special education classrooms to inclusion classrooms challenges educators to make curricular decisions that ensure significant outcomes for all students (Schoen & Ogen, 1995). To meet these demands teachers must employ an array of techniques, using direct and indirect practice, as well as varying and scaffolding specific instruction to help all students be more successful in acquiring word knowledge (McCormick & Becker, 1996).

"The development of word recognition skills is a crucial

component in learning to read" (Compton, 1997, p. 293).

> The most common causes of repetitions in
> students' reading are similar to the causes of
> omissions in reading: that is, poor word-
> recognition skills, poor word-analysis skills, or
> poor efficiency skills. Of these, a problem with
> word-recognition skill occurs most often.
> (Shanker & Ekwall, 1998, p. 55)

It was concluded in the Rupley and Willson (1997) study

that there is a high relationship between word recognition and

reading comprehension. Levy, Abello, and Lysnchuk (1997)

also found reading comprehension significantly dependent on

word recognition. The study results of Tan and Nicholas,

"...showed that pupils who received word training, whether as

single words or as words embedded in phrases and sentences,

significantly outperformed the control condition on all measures

of comprehension" (1997, p. 284). All children need to have

> ...a set of words they know to 'anchor' their
> reading-to help them monitor the way they are
> reading a text. As readers learn more, having
> many words that are quickly recognized helps
> to move the reading along so that problem solving

is not necessary on each word; fluency is supported by a large number of easily recognized words. Being able to write a small group of high-frequency words quickly without conscious attention helps young writers produce longer and more meaningful messages; they do not have to slow down to puzzle out every word. (Pinnell & Fountas, 1998, p. 88)

Having a core of known sight words and the ability to use analogies enables students to self-control the learning of new words as they read and write. Using the analogy strategy, students think of a word that looks like and sounds like a word they know, they make a comparison and onset substitution to learn and/or remember the new word (for example, if a student knows the word look—he/she can compare and change the onset to read the word shook).

The growing consensus that word recognition plays a key role in the reading process and knowing the increased necessity for different instructional vehicles suggests the need for more research. Examining different instructional methods and processes can provide teachers with more avenues in which to instruct and guide children.

Research Question

The data obtained from the study were intended to answer the following question: Does a detailed visual analysis of graphemes of words with the use of manipulatives improve word recognition in early remedial readers?

Limitations of the Study

Some of the students in the study were referred for testing for possible learning disabilities during the course of this study.

CHAPTER II

Review of Literature

Purpose

The purpose of this study was to determine if a detailed

visual analysis of the graphemes of words while manipulating

magnetic letters can improve word recognition.

Word Recognition What is it?

Many researchers wonder why adults are able to read

written materials so rapidly and fluently yet have full

comprehension (Ehri, 1995).   One answer may be found in the

research of Cunningham, Stanovich and Willson (cited in

Rupley & Willson, 1997) which provides evidence to indicate a

significant relationship between reading comprehension and

word recognition. Word recognition is not only essential for

accurate reading comprehension, it is a crucial component in

the initial stages of learning to read (Allen, Wallace & Weber, 1995).

Word recognition is recognizing words without resorting to any apparent use of mediated strategies. Basically the words are recognized by the reader on sight. It is an immediate process requiring no mediated strategy such as phonics or context. "Sight word reading refers not to a method of teaching reading but to the process of reading words by accessing them in memory" (Ehri, 1992, as cited in Ehri, 1995, p. 117). The use of flashcards is a method of teaching students to read words; it is not sight word reading. Other misconceptions are that only words not following standard spelling conventions, irregularly spelled words are sight words; and that learning sight words is memorizing the shapes and visual features ignoring letter-sound correspondence (Ehri, 1995).

History of Word Recognition Instruction

The Greeks and Romans, Renaissance Europeans, and Colonial Americans used the alphabet method. They taught children the letters of the alphabet, and how to use them to spell and read basic vocabulary. Whereas, the phonics method, in which the focus is on letter-sound relationships, and the phonogram method, which emphasizes multi-letter patterns, both emerged during the sixteenth century. By the beginning of the twentieth century, the whole word method of memorizing using the look and say repetition was used. Chall, in 1965 and 1979, compared phonics and word methods of word instruction. She found phonics to be superior in the primary grades (Hart, Berninger, 1997). Today many different methods and combinations of them of are employed in classrooms throughout the world.

Methods for Word Recognition Instruction

Levy, Bourassa, and Horn (1999) trained a heterogeneous group of poor readers in the second grade to read words using three different means. They used onset-rime segmentation, phonemic segmentation, and whole word repetition. Onset-rime segmentation is the two part division of words into units that are smaller than syllables, onset is the first division of a single phoneme or consonant cluster (for example, /br/ in bright), rime is the last division with multiple phonemes (for example /ight/ in bright. They found "...even with degree of learning controlled, generalization to reading new words and nonwords with trained segments was best in the phoneme condition and worst in the whole word condition" (Levy et al., 1997, p.136). The fastest method of acquisition for the students was within the onset/rime technique; however, students had a much lower retention rate following this method. (Levy et al., 1997). The experiments of Rey, Jacobs, Schmidt-Weigand, and Ziegler (1998) suggest that subsyllabic

components (groups of letters that form a single phoneme) play

a key role as a foundation for visual word recognition.

Another excellent method for introducing and

reinforcing high-frequency words is through shared

reading lessons and activities. It also is an excellent

> ...way of helping low-achieving readers read
> whole selections that they wouldn't be able to
> read on their own. Instead of being limited to
> books on their reading level, which may be
> simplified or lacking appeal, low-achieving
> readers are given access to more mature, more
> interesting materials. (Gunning, 1998, p. 194)

Regie Routman (1994) suggests using guided reading

lessons as a successful vehicle in teaching sight-word

vocabulary. The teacher can extract the words from text,

introduce them out of context, reinforce the learning by having

the students revisit the text to locate the target words.

Tan and Nicholas (1997) revisited flashcard instruction

with below-average seven to ten year olds, and found the whole

word method very successful in developing quick word

recognition and increased measures of comprehension. This

study certainly supports the use of flashcards within a reading program, however, it needs to follow a foundation building method and should only be used as one part of a balanced reading program.

Several high-frequency words naturally appear in all experience stories, therefore constructing an experience story with students is an effective way to practice and reinforce sight-word recognition. Interactive writing activities also provide extra sight word practice.

There are many excellent instructional methods to deliver strategic skills. The key to success for the teachers and the students is that the teachers know and match up the academic strategies with the students' developmental stages. The research results of Rieben, Saada-Robert, and Moro (1997) clearly showed students' development movement from the logographic to the assembled alphabetic, then to the orthographic phases. The logographic phase is when "...students learn words by memorizing their shape or other

distinctive features" (Gunning, 1998, p. 188); for example, they may learn the word look by remembering the oo 's in the middle look like two eyes. "The assembled alphabetic stage in reading corresponds to the letter-name stage in spelling. In both students make growing use of letter-sound relationships" (Gunning, 1998, p. 189). In the orthographic phase, students begin to use spelling patterns or cluster units; for example, in decoding the word candle the student may read *an/can/ candle.* Rieben, Saada-Robert, and Moro "...believe that a developmental description is relevant not only from a theoretical point of view but also with respect to educational concerns" (Rieben et al., 1997, p. 156). The use of matching strategies to corresponding phases is pertinent to tailoring instruction to the individual student.

Multi-modalities in Learning

In Piaget's developmental stages of learning, the operative learning stage refers to the learning that takes place as the child is actively engaged and interacting with materials in his/her environment. "According to Piaget, children require concrete activity in order for genuine learning to take place" (Etemad, 1994, p. 10). "When children are actively solving words and using them, they learn more effectively. The understandings become their own because they have engaged with them, not simply heard them" (Pinnell & Fountas, 1998, p. 17). The research and philosophical belief of Montessori (cited in Etemad, 1994) emphasizes physical activity and movement in learning. Her research clearly shows that the orchestration of the brain, sensory organs, and the muscles is necessary to complete the cycle for learning to take place. Hecker (1997) explains how manipulatives utilize students' spatial intelligence while movement utilizes kinesthetic intelligence. Working together, they help students to better

understand language structures than verbal explanations. A child's level of understanding is increased as he/she has the opportunity to become actively engaged in his/her learning using a physical component that involves body motion rather than relying solely on visual and auditory means (Etemad, 1994). Tactile and kinesthetic activities and the use of manipulatives in lessons clearly engage learners, promote student learning, and enhance students' attitudes.

The research of Blahut and Nicely (1984) indicate a direct correlation between the method of instruction and the students' attitude toward the content. They found that tactile activities resulted in an increase in students' positive attitudes toward the content being learned and the learning experience. Students engaged in learning through hands-on activities in a study conducted by Johnson, Wardlow, and Franklin (1997) had significantly more positive attitudes toward the content and learning.

Price (1980) and Keefe (1979) found primary grade students to be more tactual/kinesthetic learners, who become more visual learners in second or third grade (Geoghegan, 1996). Carbo (1983) agrees that modality preference is developmental and found primary age students to be predominately tactile/kinesthetic learners. Valdez (1994) found the addition of a tactile/kinesthetic component to a whole language program, successfully increased automatic word recognition, comprehension skills, and fluency in first-grade bilingual students.

Though research supports the inclusion of tactile/kinesthetic activities in instructional lessons for primary students, it may be beneficial to integrate multi-modalities in instructional lessons for students of all ages. Gardner (1983) has presented educators with insight to the unique and different learning styles students of all ages have as learners. The Burhorn, Harlow, Van Norman and Fox (1999) study found a significant decrease in off-task occurrences when multiple

intelligence teaching methods were used. Instructional lessons

that interweave visual, auditory, tactile and kinesthetic

modalities can more completely address the needs and

learning styles of all students.

Summary

The research identifies the need for teachers to provide

instructional lessons that are designed with specific methods

and techniques to meet the development stages and academic

learning styles of all students. The making and breaking of

words, using onset-rime sementation, word building and

analogies; shared reading activities; guided reading lessons;

flashcard instruction and review; and writing experience stories

are all key components in a balanced literacy program. They

all promote the learning and practicing of high frequency words.

The visual, auditory, tactile, and kinesthetic modalities are

vehicles educators can use to help promote students' cognitive

processing, increase attentive behaviors, and encourage more

positive attitudes towards learning.

CHAPTER III

Design of the Study

Purpose

The purpose of this study was to determine if a detailed visual analysis of the graphemes of words while manipulating magnetic letters can improve word recognition.

Methodology

Subjects:

The subjects in this study consisted of a group of eight students, five boys and three girls. These students were previously identified to receive Chapter One remedial reading support. They attended a suburban school district in Western New York State and are in first grade.

<u>Materials:</u>

The Observation Survey Letter Identification Test and subtests from the Frequent Reading Words Test from the Early Literacy Profile Assessment Instrument were used for pretesting and post testing (see Appendix A and B for tests). The target sight words were selected from the New York State High Frequency Word List. The target words for week one and two were both abstract words. For week one the word was <u>from</u> and for week two the word was <u>away</u>. The target words for weeks three and four were <u>little</u> and <u>long</u> respectively. These two words are adjectives with high imagery. For weeks five and six, the verbs <u>went</u> and <u>got</u> were chosen as target words. Each week the new word was introduced through the context of big books during shared reading. Plastic magnetic letters were used to analyze the visual structure of words. They were also be used to manipulate and construct the sight word as it is studied. Slates, flash cards, and mobility boards were used for quick and/or repetitious word practice. To use the

newly learned sight word in text, sets of individual leveled books were read.

Procedure:

A new sight word was introduced each week for a total of six weeks to the two groups of nine students (see Appendix C for the lists of six words). Weeks one, three, and five were the treatment weeks, in which a detailed visual analysis using the magnetic letters were included in the lesson. Weeks two, four, and six were the control weeks, in which the daily lesson was identical to the treatment weeks except the visual analysis was omitted from the lesson.

Every Monday and Friday, the students were given a reading test of eight sight words, seven of which have been introduced prior to this study and the one target word for that particular week. Students that could accurately read the sight word being introduced were omitted from that week's data for analysis.

The daily activities for each week were:

Day One-

- The students were given a reading test of eight sight words, seven that had been introduced prior to this study and the target word for that week.

- A teacher selected big book was used for shared reading. The targeted sight word for that particular week was taken from the text.

- The teacher directed the students' attention to a word card displaying the word. The teacher read the word and had the students echo it.

- On alternating weeks students were each given a set of magnetic letters and were asked to make the word. Referring to their magnetic letter word, students answered the following questions: How many letters are in the word ___? What is the first letter? What is the last letter? Are the letters tall or short or a

combination of the two? They were instructed to mix up the letters and remake the word.

- The students independently said the word and wrote it on a slate.

- Individual copies of a leveled book (at the approximate instructional range of students) were distributed and the teacher guided the students on a picture walk planting any necessary vocabulary words. The students were then directed to locate the new sight word in text, point to it, and read it.

Day Two

- The students read yesterday's leveled book and located the week's word.

- On alternating weeks students once again constructed the word out of magnetic letters and discussed the visual features of the word.

- Each student received a mobility board (a nine inch by twelve inch piece of tag board with twelve differently colored rectangles covering its surface) and word cards, each card printed with a vocabulary word. The teacher directed the students to place a particular word on a designated color rectangle of the mobility board. The directions continued, such as, move "look" to blue.

- Students rapidly read words from flash cards consisting of previously learned words and the new word introduced that week.

Day Three

- A second big book was introduced for a shared reading experience. Students were invited to take turns locating sight words in the text.

- On alternating weeks the magnetic letters (just enough for each student to make the word) were randomly placed in the middle of the students. The teacher said

the word and the students gathered the letters they needed to construct the word and made the word.

- Each student was given a bingo card, the teacher displayed and said the words one at a time, the students orally repeated the word and selectd a bingo square to write it in. Students played sight word bingo.

Day Four

- Individual copies of a new leveled book (at the approximate instructional range of students) were distributed and the teacher guided the students on a picture walk planting any necessary vocabulary words. The students were directed to locate the new sight word in text, point to it, and read it.

- The teacher wrote the sight for that week on the board, and elicitd students to read it. As a group, students generated a list of words that rhymed with the sight word. The teacher wrote the words on the

board. A discussion then followed, comparing and contrasting the words.

- Students rapidly read words from the flash cards consisting of previously learned words and the new word introduced that week.

Day Five

- Students selected one book from the leveled books read that week for a spontaneous reading activity. As the students finishing reading the text, they located and pointed out the words they knew from the text. If they did not point out the word studied that week, the teacher asked them to try to locate it.
- The students were given a reading test of eight sight words seven words that had been introduced prior to this study and the target word for that week.

Analysis of Data

After all pretests and posttests were gathered, the researcher categorized the posttests into two groups. Group one was from the weeks that included structural analysis activities and group two was the posttests from the weeks without structural analysis activities. The researcher examined and compared the results of the two groups of posttests using a t-test.

Research Question

The data obtained from the study were intended to answer the following question: Does a detailed visual analysis of graphemes of words with the use of manipulatives improve word recognition in early remedial readers?

CHAPTER IV

Analysis of Data

Purpose

The purpose of this study was to determine if a detailed visual analysis of the graphemes of words while manipulating magnetic letters can improve word recognition.

Analysis and Interpretations

The overall results indicate no significant improvement in word recognition when magnetic letters were used in conducting a detailed analysis of graphemes of words. In the lessons not using magnetic letters, 46% of the words not known prior to the lessons were still unknown after the lessons (Table 1). In the lessons using magnetic letters, 58% of the words not known before the instructional lessons were known after the lessons (Table 1). This shows a 12% increase overall in word recognition when instruction included a detailed visual analysis using magnetic letters. However, in the t test, the calculated t

(–2.05) was not greater than the critical t (2.36). Therefore, the results of the t test revealed no statistically significant difference between the two instructional approaches to improving word recognition (Table 2). But a trend in this direction was obtained.

The inclusion of a detailed analysis with the use of magnetic letters resulted in:

- a 13% increase in word recognition for weeks one and two with the abstract words, from and away

- a 38% increase in word recognition for weeks three and four with the high imagery adjectives, little and long

- a 2% decrease in word recognition for weeks five and six with the verbs, went and got

The 38% increase in word recognition of adjectives with high imagery suggests that the type of word, as well as, the learning process, helps enable students to more successfully acquire words.

The five males collectively increased their word

recognition by 13% with the use of the magnetic letters.

The three females learned a total of 6 out of 9 words (66%)

in both lessons including and excluding the use of a detailed

analysis with magnetic letters. This might suggest that males

benefit from instructional lessons that include the use of

manipulatives in tactile and kinesthetic activities more than

females.

Two of the students in this study were referred for testing

for possible learning disabilities. During the course of this study

both students were identified as learning disabled. The use of

a detailed analysis using magnetic letters did not alter either

student's word recognition. Both males learned 1 out of 3

words in lessons not using the magnetic letters, as well as, with

lessons using magnetic letters.

Word Recognition Data

Students	# of words known before but not after lessons	# of words known before and after lessons	# of words not known before nor after lessons	# of words not known before, known after lessons	% of words learned in lesson
Lessons Not Using Magnetic Letters					
Student #1	0	0	2	1 out of 3	
Student #2	0	2	0	1 out of 3	
Student #3	0	1	1	1 out of 3	
Student #4	0	0	1	2 out of 3	
Student #5	0	0	1	2 out of 3	
Student #6	0	0	2	1 out of 3	
Student #7	0	1	0	2 out of 3	
Student #8	0	0	2	1 out of 3	
Totals	0	4	9	11 out of 24	46%
Lessons Using Magnetic Letters					
Student #1	0	absent	1	1 out of 3	
Student #2	0	0	1	2 out of 3	
Student #3	0	1	1	1 out of 3	
Student #4	0	0	1	2 out of 3	
Student #5	0	1	0	2 out of 3	
Student #6	0	0	2	1 out of 3	
Student #7	0	0	0	3 out of 3	
Student #8	0	0	1	2 out of 3	
Totals	0	2	7	14 out of 24	58%

t-Test: Paired Two Sample for Means		
	Control	Exper
Mean	1.38	1.75
Variance	0.27	0.50
Std Dev	0.52	0.71
Observations	8.00	8.00
Pearson Correlation	0.68	
Hypothesized Mean Difference	0.00	
df	7.00	
t Stat	-2.05	
P(T<=t) two-tail	0.08	
t Critical two-tail	2.36	

CHAPTER V

Conclusions and Implications

Purpose

The purpose of this study was to determine if a detailed visual analysis of the graphemes of words while manipulating magnetic letters can improve word recognition.

Conclusions

The results of this study seem to indicate that a detailed visual analysis of the graphemes of words while manipulating magnetic letters does not significantly improve word recognition. However, a trend in this direction was noted.

It is possible that the results of this study were affected by the total number of subjects and the total number of high frequency words being relatively small. There was, however, a minimal increase in students' word recognition in instructional lessons including the use of manipulating magnetic letters in

comparison to the lessons not including a detailed visual analysis with magnetic letters. The increase was more dominate in the male students, suggesting a need of more tactile and kinesthetic lessons for boys to increase active participation and success. Overall the results of the t test clearly show that the difference was not statistically significant suggesting that a detailed visual analysis of the grapheme of words while manipulating magnetic letters did not profoundly improve word recognition in the present study.

According to teacher observation during the study, the students seemed more attentive and actively engaged during the lessons in which they were manipulating magnetic letters and visually analyzing the words to be learned. Active participation is an important and key element for all instructional lessons. Studying and learning words through more conventional methods may not promote the student engagement that using manipulatives, such as, magnetic letters does.

Implications for Schools

There are some implications for schools in regards to the effectiveness of improving word recognition in students. A solid core of sight words increases student reading fluency and comprehension. There is extensive research to substantiate the correlation between word recognition and reading comprehension rates. Therefore, it would be beneficial for school districts to offer staff development workshops in effective methods for teaching word recognition. In addition to workshops, three excellent professional resources for teachers are: Guided Reading Good First Teaching for All Children by Irene C. Fountas and Gay Su Pinnell; Invitations Changing as Teachers and Learners K-12 by Regie Routman; and Word Matters Teaching Phonics and Spelling in the Reading/Writing Classroom. Guided Reading provides word activities and center ideas for teachers. Regie Routman in Invitations explains how to design small-group lessons to teach sight

words meaningfully. Word Matters includes a comprehensive word study system.

Implications for Research

For further research in this area, it may be interesting to survey the participating students' attitude toward the two learning processes. Since a trend was observed it would also be of value to repeat the study with a larger group of participants and a larger bank of core words. A comparison study examining the effects of a detailed visual analysis of graphemes of words using magnetic letters with students' of different learning styles may also be an area for further research to match up and assess the effectiveness specific learning styles and method of teaching.

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TEST SCORE /54

STANINE GROUP

te:_____

me:_____ School: _____

corder:_____ Classroom Teacher: _____

	A	S	Word	I.R.		A	S	Word	I.R.
\					a				
;		+			f				
<					k				~
)					p				
V					w				
,					z				
B					b				
H					h				
O					o				
I					j				
J					u				
					a				
?					c				
Y					y				
					l				
D					q				
M					m				
D					d				
N					n				
S					s				
X					x				
					i				
E					e				
G					g				
R					r				
V					v				
T					t				
					g				

TOTALS

Confusions:

Letters Unknown:

Comments:

Recording:

A Alphabet name response: checkmark

S Letter sound response: checkmark

WORD Record the word the child gives

IR Incorrect response: Record what the child says

Research
Oriented
Amplification of
Development
to LITERACY

100 Most Frequent Words in Books for Beginning Readers

1. the	26. he	51. be	76. cat
2. a	27. out	52. now	77. them
3. and	28. that	53. when	78. tree
4. to	29. one	54. there	79. where
5. I	30. big	55. into	80. away
6. in	31. go	56. day	81. time
7. is	32. was	57. look	82. as
8. on	33. like	58. eat	83. water
9. you	34. what	59. make	84. home
10. it	35. not	60. his	85. made
11. of	36. do	61. here	86. long
12. said	37. then	62. your	87. has
13. can	38. this	63. an	88. help
14. for	39. no	64. back	89. good
15. my	40. too	65. mom	90. going
16. but	41. she	66. dog	91. by
17. all	42. went	67. very	92. how
18. we	43. see	68. did	93. house
19. are	44. will	69. her	94. dad
20. up	45. so	70. from	95. or
21. at	46. some	71. had	96. two
22. with	47. down	72. got	97. red
23. me	48. little	73. put	98. am
24. they	49. come	74. came	99. over
25. have	50. get	75. just	100. saw

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Early Literacy Profile

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Appendix C: Weekly word lists

Week 1:	Week 2:	Week 3:
the	to	go
and	you	like
am	my	on
is	up	dad
we	in	has
can	see	be
like	cat	at
from	away	little

Week 4:	Week 5:	Week 6:
it	as	dad
he	me	by
one	big	red
no	do	not
did	will	had
into	look	this
going	make	come
long	went	got