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# An evaluation of the efficacy of the Glass Analysis method of word decoding with second and third grade disabled learners

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# AN EVALUATION OF THE EFFICACY OF THE GLASS ANALYSIS METHOD OF WORD DECODING WITH SECOND AND THIRD GRADE DISABLED LEARNERS

by
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ABSTRACT

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An Evaluation of the Efficacy of the Glass Analysis Method

of Word Decoding with Second and Third Grade Disabled Learners

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Dr. Stanley Urban

Master of Arts Degree in Learning Disabilities

Glass Analysis for Decoding Only is one of the many methods available for teaching decoding skills to students with disabilities. This study was designed to examine the effectiveness of Glass Analysis for Decoding Only on the reading achievement of primary age students with learning disabilities. A convenience group of eight second and third grade students receiving instruction in the self-contained special education classroom served as subjects. For a period of five months, students received Glass Analysis as the primary method of decoding instruction. Research examined the effect of this instruction in the areas of word recognition, reading comprehension, listening comprehension, listening vocabulary, and spelling. Pre-test and post-test assessments were conducted using the Jerry John's Basic Reading Inventory and the Brigance Comprehensive Inventory of Basic Skills. Glass Analysis appeared to have a positive effect on overall reading achievement. However, spelling was unaffected by this method.

MINI-ABSTRACT

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This study was designed to examine the effectiveness of the Glass Analysis for Decoding Only Method on the achievement of primary age students with learning disabilities. An examination of the results showed that reading achievement improved in six of the eight students. Spelling achievement was unaffected by this method.

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# Chapter 1

## Introduction

Reading skills are an important tool for school learning and are indispensable for success in all content areas. For example, a first grader may read from a language experience chart or a picture book. A few years later, students are expected to read chapter books and content area texts. Solving problems in math class involves more than simply adding or subtracting since a student may need to read and comprehend a word or story problems. When a student reaches upper grades, reading challenges increase. The student may need to read notes from the overhead or read complex material. Furthermore, reading becomes essential for life skills for example; a young student may want to read his own birthday card; a teenager may want to study a driver's manual; and all students will need to be able to read an employment application. For some students, particularly students with learning disabilities, these reading tasks and others are very difficult, if not impossible.

Reading has been cited by some authorities as representing the primary difficulty among students with learning disabilities (Carnine et al, 1990; in Mercer 1997). Thus, providing effective reading methods when teaching these learners is an important goal of special education. Identification of the most efficacious methods, however, can be a difficult challenge.

## Value of the Study

In order to read fluently, a child must be able to decode at the level of individual words. Several methods have been designed specifically with the learning disabled student in mind. One such method is the Glass Analysis for Decoding Only method, which is being used for decoding instruction in many settings. This method has been designed for use before a student progresses to higher levels of meaning and comprehension (Glass,G. & Glass, E.,1990). Therefore, this study is designed to determine how well this method helps younger learning disabled students learn to decode.

This study has value in determining the effectiveness of this methodology. The data obtained will aid in selecting effective instructional methods for learning disabled student populations. As more materials become available, it becomes increasingly difficult to know which ones will be most effective with any given learner.

Practical constraints of time and money do not allow teachers to be trained in all the possible methods for teaching reading or to possess the entire array of materials available for individualized and small group reading instruction. Since economy of effort and expense are factors in the selection of methods and materials, it becomes essential to know what reading methods are the most effective. Outcomes of this study may help some special educators to make the right selection of materials. Furthermore, this study can help educators determine if Glass Analysis is an effective method of improving the achievement of younger students with reading problems.

## Purpose of the Study

The purpose of this study is to evaluate the effectiveness of Glass Analysis for Decoding Only as a method for teaching word decoding skills to primary age learning disabled students.

## Research Questions

To accomplish the general purposes of this study, the data is used to answer the following research questions:

Question 1--Will students be able to decode or recognize more words from each "cluster pack" in Glass Analysis for Decoding Only after five instructional sessions compared to decoding skills prior to instruction?

Question 2--Will students show improvement in Word Recognition as measured by the Jerry John's Basic Reading Inventory after receiving instruction in Glass Analysis for Decoding Only?

Question 3 --Will students demonstrate improvement in reading comprehension level as measured by the Jerry John's Basic Reading Inventory?

Question 4--Will the students' level of listening comprehension and listening vocabulary improve as measured on the Brigance Comprehensive Inventory of Basic Skills after receiving instruction in Glass Analysis for Decoding Only?

Question 5- Will the students' level of spelling achievement demonstrate growth as measured by the Brigance Comprehensive Inventory of Basic Skills after receiving instruction in Glass Analysis for Decoding Only?

## Operational Definitions

The following measures and terms were used to define the specific variables assessed in this study.

Cluster Pack--a packet of words presented on individual cards and organized by letter clusters. ( For example, "ay," "in," and "it.")

Word Recognition--the ability to accurately decode words as contained on word lists and in reading passages of the Jerry John's Basic Reading Inventory, Form A (Johns, 1997).

Reading Comprehension--the ability to accurately answer questions related to paragraphs contained in the Jerry John's Basic Reading Inventory, Form C.

Listening Vocabulary--the ability to determine which word does not belong in orally presented word groups as presented on the Brigance Comprehensive Inventory of Basic Skills (Brigance, 1983).

Listening Comprehension--the ability to answer questions after listening to a short passage as presented on the Brigance Comprehensive Inventory of Basic Skills.

Spelling Achievement-- the ability to spell orally presented words from word lists in the Comprehensive Brigance Inventory of Basic Skills.

## Limitations of the Study

A convenience group of eight students, ages seven through nine, receiving daily instruction in Glass Analysis for Decoding Only will serve as subjects for this study. Participants in this study are eligible for special education because of specific learning disabilities. Their current placement is within the self-contained special education classroom. Students attend art, music, physical education, lunch, and recess with the general school population. In addition, they receive social studies, science and health instruction in both the self-contained special education class as well as a third grade general education class. These students were not randomly chosen, rather they represent a convenience sample because they are children in the researcher's classroom. Another limitation is the small sample size which is limited to eight students. In addition, no control group will be used for this study since it was felt that it would be unethical to deprive the children of potentially beneficial instruction. Finally, other methods are used for reading instruction in the classroom. Instruction is not limited to the use of the Glass Analysis for Decoding Only Method; thus effects of this method are confounded with other instruction. The additional strategies and methods are mandated in the students' Individual Education

Plans in order to provide comprehensive instruction to the learners. Therefore, generalization regarding the effectiveness of Glass Analysis for Decoding Only to other groups must be done strictly on a judgmental basis.

## OVERVIEW OF THE STUDY

Specific information regarding the characteristics of the students involved in the study and the research design will be presented in Chapter Three of this paper. In Chapter four, the analysis of the results will be outlined. In the last chapter, a summary and discussion of findings will be presented.

In order to gain a better understanding of the Glass Analysis for Decoding Only method, the literature will be reviewed in Chapter two. Information describing the method and terminology are essential to the implementation and interpretation of this study.

# Chapter 2
# Review of the Literature

Teaching children to read is one of the most important responsibilities any teacher can undertake. Furthermore, learning to read provides joy to many students. Reading serves as a gateway to learning an array of subjects throughout a student's school years. Adults, as well, use reading to gain information. However, Dr. Reid Lyon, in his *Report on Learning Disabilities Research*, stated that for about half of the nation's children, learning to read is a challenge. In addition, for at least twenty to thirty percent of these children, reading will prove to be one of the biggest challenges of their lives. Results of studies at the National Institute of Child Health and Human Development show that children who are poor readers in kindergarten and first grade continue to have difficulty throughout their school years (Lyon, 1997).

Reading is a complex task (Mercer, 1997; Collins and Cheek, 1993). Cecil D. Mercer (1997) defines reading as "a visual-auditory task that involves obtaining meanings from symbols (letters and words)." Reading includes two basic processes: a decoding process and a comprehension process (Mercer, 1997; Samuels 1988). This study will focus primarily on the decoding process.

Word recognition or decoding skills are crucial to the reading process. These skills are so important that S. Jay Samuels (1998) believes that decoding skills are a prerequisite for comprehension and skilled reading. Furthermore, he indicates that word recognition should become accurate and automatic. Practice is necessary in order to

become more accurate. Not only do teachers need to provide time for practice, they also need to help motivate their students.

Dr. John Shelfelbine (1998) of California State University reviews research that shows that advanced students use decoding skills when faced with unfamiliar words. On the other hand, slow readers rely on context clues. He also stresses the importance of teaching phonics. Phonics should be taught in an orderly and logical way. Teachers should emphasize commonly used letter groups as well as individual vowels and consonants, while continuing to use the whole language approach.

Phonics instruction should be systematic (Shefelbine, 1998). In fact, instruction for decoding should be systematic. For students with learning disabilities, systematic instruction can be effective. Dr. Douglas Fuchs, along with Patricia G. Matthes and Lynn S. Fuchs of Peabody College, Vanderbilt University have designed a systematic approach for peer instruction in reading. In a speech presented to learning consultants, Douglas Fuchs (1998) discussed findings from studies conducted on Peer-Assisted Learning Strategies for Instruction in Reading and Math ("PALS"). In this program, students work with partners three times per week for thirty minutes a session. During this time, the partners act as coach and reader while working on word recognition and comprehension activities. The research on this program indicates that children in PALS classrooms outperform their counterparts in control classrooms. Children from all ability levels, including the learning disabled population benefited from PALS. The program also appears to have helped the learning disabled children gain more peer acceptance.

In a study designed by Russell Gersten, Martha Morvant, and Susan Brengelman (1995), more information on reading instruction for learning disabled students is revealed. The study was designed to improve the quality of reading instruction for students with learning disabilities. It was found that concerns and priorities differ between general and special education teachers. The project coordinators endeavored to bring research based

teaching practice into general education classrooms. Special educators suggested ways to use systematic instruction to build students' abilities. It was found that teachers in the general education classrooms rarely used these kinds of approaches. This project was conducted in a large inner city elementary school over a two year period. During this time, researchers also found that something as simple as spending two minutes practicing difficult vocabulary could help students who had never been successful at reading.

Teaching methods can affect students' progress. Joseph H. Beitchman and Arlene R. Young (1997), in their review of reading disorders, discovered that the most common and best researched disability is reading disabilities. As part of this review, they found that nearly half of all children receiving special education services are considered learning disabled (U.S. Dept. of Education, 1991 cited in Beitchman & Young, 1997). They also found that attempts to help children with learning disabilities have ranged from tutorial help to sophisticated programs directed at difficulty in phonics.

In a study by Sharon Vaughn, Sally Watson Moody, and Jeanne Shay Shum (Vaughn, et al., 1998), surprising findings resulted. The study was designed to examine reading instruction and grouping practices of learning disabled students by special education teachers in resource rooms. Researchers observed and interviewed fourteen special education teachers representing thirteen schools. Research findings showed that teachers primarily used whole group reading instruction (5-19 students) and little differentiation in methods or materials for a wide range of abilities. In general, teachers used a whole language approach with little or no word recognition or comprehension instruction. However, the study found that none of the teachers believed whole language was adequate enough to teach reading to their learning disabled students. Many used whole language because of pressure from administration or because that is what the rest of the school did. Ultimately, researchers found that students made little or no growth, thus indicating a need for more extensive, systematic instruction for learning disabled students.

Studies show that students have more success with alternative approaches since they stress individual differences (Beitchman & Young, 1990; Smith, 1998). Special programs include those which initially stress individual letter-sound correspondences and then teach syllables and words; as well as those which introduce whole words first and then teach students to deduce letter-sound correspondences (Beitchman & Young, 1997).

Studies have shown that students with learning disabilities need intensive instruction in order to learn to read (Jenkins, et al., 1994; Lyon, 1997). Researchers at the National Institute of Child Health and Human Development (NICHD) have declared that reading begins with the decoding and word recognition stage of reading. In fact, decoding and word recognition difficulties are at the core of most reading difficulties (Lyon, 1997). This information magnifies the need for effective decoding instruction.

In summary, findings show that reading instruction begins with decoding. Instruction should be systematic and individualized to be effective for learning disabled students. This instruction, however, does come with a hefty price tag. Bills are estimated to be in the billions of dollars. Statistics indicate that public schools spend about $8,000.00 a year on average to educate a learning disabled student compared to $5,500 for an ordinary student (Roush, 1995).Therefore, it becomes imperative to select materials that are effective and cost-efficient. One method that may fit this criteria is the Glass Analysis for Decoding Only Method created by Gerald G. Glass.

Glass Analysis for Decoding is described as an effective, economical, and easy to use method. It can be used with individuals or small groups. While bypassing deficiencies in vocabulary and language in the decoding only teaching, it also can be used with any ability level. The method provides continuous reinforcement and does not require a high cognitive level for success. The purpose of the Glass Analysis for Decoding Only is to make it easier for children to learn to decode (Glass, G. & Glass,E., 1997).

Jeannette Miccinati (1981) believes that Glass Analysis has many good features. Glass Analysis focuses the learner's attention to a stimulus: distinctive clusters of graphic features related to particular sounds. Presentation of the clusters with a visual word develops a connection between graphic symbols and the sound pattern of talk. Different types of words are used throughout the program. Words presented contain from one to four syllables. For severely disabled learners, perception and analysis of distinctive features or the redundancies within words does not take place automatically. Students must be taught the features or words. With Glass Analysis, emphasis is not on the memorization of words. Specific steps are followed throughout the presentation. The teacher should develop a rapid, attention focusing presentation while at the same time reinforcing attending behaviors. If presentation is not focused and rapid, student participation will decrease. Ultimately, for some students, the cluster-pattern method taught in Glass Analysis becomes a method of survival.

Gerald and Esther Glass (1990) describe the method and techniques in the Teacher's Guide for the Glass Analysis method. As already mentioned, Glass Analysis utilizes clusters to help learners acquire decoding skills. Glass Analysis clusters are developed using crucial sound/symbol common letter structures. For example, some of the 119 clusters include: /ing/, /at/, /it/, /ai/ and /oi/. The Glass Analysis method is divided into kits, labeled as follows: Starters, Mediums, Harders, and Completers. The Starters Kit, which contains the easiest clusters, will be utilized for this study. Within the cluster packs there is a range of difficulty. The words are coded as simple, average, or difficult. For those students at lower instructional levels, the Glass Analysis method also provides an alphabet instruction program and Easy Starts Kit.

The Glass Analysis For Decoding Only Method is very specific. Teachers can use an index card that lists step-by-step prompts until they have memorized the presentation. According to Glass, teachers begin each session by identifying the target cluster. Then, the

teacher says the whole word. Students repeat the word. Next, the teacher asks what sounds are made by specific letters as well as what letters makes specific sounds. Finally, the teacher asks, "What is the whole word?"

Other notes provided by Glass help the teacher achieve effective presentation. For example, it is imperative to keep cluster sounds as a unit. Teachers should not separate, either auditorily or visually, the letters that form a natural vowel cluster. In addition, the teacher should always present the whole word, because when a reader decodes, he or she sees the entire word.

Presentation of the cards should be rapid. Also, teachers should ask for individual and group responses. This will provide more information regarding a specific student's decoding ability.

Glass also indicates that fifteen minute instructional sessions are appropriate. However, students having a history of decoding difficulties will benefit from at least two sessions. Students with severe learning disabilities should have as many decoding sessions as possible throughout the day. Finally, a cluster should be taught at least three times. Whenever possible, clusters should be reviewed (Glass,G. & Glass, E., 1990).

There is limited research specific to the Glass-Analysis for Decoding Only Method. In fact, research uncovered exactly three studies into this method. The most recent study by Marie Ceviva Walsh (1991) was conducted to determine whether a relationship exists between the decoding method used for reading and the achievement in areas of word attack, reading comprehension, and spelling. One hundred seventy seven third grade students served as subjects for this investigation with ninety five students receiving Glass-Analysis instruction; and eighty two receiving synthetic phonics instruction. Variables studied included reading attitude, learning preference, IQ, and sex. At the completion of the two year study, it was determined that no significant relationship existed between the decoding method and word attack, reading comprehension, and spelling

achievement. However, data indicated that reading comprehension results approached significance in favor of the Glass-Analysis Method.

Elisabeth Juilda Barger (1992) studied the relative growth in decoding ability, ability to read accurately and fluently, and spelling ability with the use of Glass-Analysis for Decoding Only Method. One hundred eighty four reading-disabled children received Glass-Analysis training as a supplement to their basal reading program. Research findings supported three conclusions; first, Glass-Analysis proved to be an effective technique for teaching reading-disabled children to decode words; second, this method is highly effective in teaching spelling skills; and finally, decoding and spelling skills can be significantly improved through instruction which emphasizes letter-sound patterns. Glass-Analysis instruction did not produce significant improvement in reading accuracy and fluency.

In another study by Lydia Virginia Lind Poe (1984), the Glass-Analysis For Decoding Only Method was utilized for segmentation training for first grade students. A total of 159 students were identified as having the inability to segment orally and/or visually. Results showed that visual segmentation and decoding ability did not improve significantly after Glass-Analysis training; however, oral segmentation ability improved significantly following Glass-Analysis instruction.

## SUMMARY

Special education teachers work hard to find the right solution when it comes to teaching reading to their learning disabled students. Research shows that the most effective decoding instruction is frequent and systematic. However, some teachers do not implement these practices. Those choosing to solely use the whole language approach agree that it is not enough to effectively teach decoding skills. Teachers need to be more

aware of the programs that are available for instruction. Yet, it is often difficult to choose a method when so many commercially produced methods are published. For example, according to Searfass and Readence (1989), there are more than ninety published ways to teach phonics alone.

This study will focus on one particular method of decoding instruction. Glass Analysis For Decoding Only was created by Gerald Glass. This method promotes systematic, frequent instruction. Using clusters, students are able to decode new words. Prior research into the Glass-Analysis For Decoding Only Method has produced mixed results; however, studies have shown that Glass-Analysis instruction can favorably impact the achievement of reading disabled students. Results of this study may contribute more evidence that Glass Analysis can, in fact, have a positive effect on the decoding skills of this struggling population of learners. Perhaps, for some learning disabled students, Glass-Analysis can be the key that opens the door to reading.

# Chapter 3
# Design of the Study

## Sample

This investigation will utilize a convenience group of eight second and third grade students from a suburban school district in southern New Jersey. These students have been identified as learning disabled and spend the majority of their instructional day in a self-contained special education classroom. All students receive instruction in reading, math, social studies, science, and health from a special education teacher. In addition, students from this sample participate in an inclusion class for social studies, science, and health. Students attend physical education, art, and music with the general student population. Students in this study also participate fully with the general school population for lunch, recess, assemblies, and other school activities.

For purposes of this study, including record keeping and confidentiality, students will be identified by a number. Each student has been profiled briefly in order to further investigate outcomes of any data collected for the duration of the study.

Student #1 is a nine year old white female in grade three. Her intellectual functioning is in the low average range. She receives both occupational and speech therapy. She is currently taking prescription medication for Attention-Deficit Hyperactivity Disorder.

Student #2 is a seven year old white female in grade two. Her intellectual functioning is in the average range. She is currently taking prescription medication for

Attention Deficit Disorder. She also has a history of abnormal electroencephalograms (EEGs).

Student #3 is an eight year old white female in grade three. Her intellectual functioning is in the average range. She has a history of distractibility. She has been diagnosed with asthma, sometimes requiring breathing treatments during school hours.

Student #4 is a nine year old white male in grade three. His intellectual functioning is in the average range. He receives occupational therapy, physical therapy, and speech therapy. His medical diagnosis is spina bifida.

Student #5 is a seven year old white male in grade two. His intellectual functioning is in the average range. He has a history of impulsive behavior and has short attention span. He frequently gets out of his seat, "calls out", and makes noises during instruction and seat work activities.

Student #6 is a seven year old African-American male in grade two. His intellectual functioning is in the low average range. He has been diagnosed with both diabetes and asthma.

Student #7 is a an eight year old white male in grade three. His intellectual functioning is in the above average range. He has a history of seizure activity at night which affects both his energy level and behavior. He often has difficulty staying focused in class.

Student #8 is an eight year old African-American male in grade three. His intellectual functioning is in the average range. He has a history of impulsivity and distractibility. He has difficulty forming peer relationships.

## Measures

The sample population will be evaluated using three measures: The Basic Reading Inventory by Jerry L. Johns (1997), the Brigance Comprehensive Inventory of Basic Skills (1983), and an informal checklist of word-recognition for the Glass Analysis for Decoding Only Cluster Packs.

The Basic Reading Inventory will be utilized to obtain both pre-test and post-test scores for word recognition and reading comprehension. The Basic Reading Inventory is an individually administered informal reading test. For purposes of this study, Form A will serve as a pre-test and Form C will serve as a post-test. Students will be assessed for oral reading ability; silent reading will not be addressed. In addition, reading levels within the sample require use of the Early Literacy Assessments of the Basic Reading Inventory. Results of these assessments will be reported in Chapter 4 of this paper.

Listening vocabulary, listening comprehension, and spelling will be evaluated using the Brigance Comprehensive Inventory of Basic Skills. (Brigance, 1983). The Brigance is a criterion referenced test that includes 203 skill sequences covering a variety of subjects. For this study, Form A of the Brigance will be utilized as a pre-test and Form B will serve as the post-test. Testing will take place at the beginning and end of the study in both the Basic Reading Inventory and the Brigance Comprehensive Inventory of Basic Skills.

In order to assess recognition of words within the Glass Analysis for Decoding Only word clusters, a checklist of each clusters' words will serve as means for record keeping. Students will be asked to read the words before instruction occurs for each given cluster. The teacher will mark responses for each student on the cluster word list. After five instructional sessions using the Glass Analysis for Decoding Only Method, the students will once again be asked to read the cluster pack words. During this evaluation, words will be presented in a random order and responses will once again be recorded on the cluster pack word list. Results will be reported in both "number of correct responses"

as well as "percentage of correct responses." Data will be collected throughout the duration of the study.

## Design

Using a pre-test / post-test format, data will be gathered at the start and conclusion of the study. In addition, continuous pre-test and post-test information will be collected regarding recognition of words within the Glass Analysis for Decoding Only packs. Instruction in the Glass Analysis For Decoding Only Method will last for five months. A new cluster packs will be introduced after five sessions of instruction in each pack. In order to maintain word recognition and decoding skills in previously taught cluster packs, instruction will include regular review of these words.

At the conclusion of the study, pre-test and post-test information will be evaluated to determine how much each student progressed. Background information on each student may serve as variables in analysis of the data.

## Propositions of the Study

Subjects in this study will improve in their ability to decode or recognize cluster words in each cluster pack. Word recognition as assessed on the Jerry Johns will likely improve marginally given previous achievement history. In regards to reading comprehension, minimal growth is anticipated due to levels of listening vocabulary and listening comprehension as well as Glass Analysis' focus on decoding only instruction. Furthermore, it is anticipated that the students' spelling level will increase, on average, by one level as shown using the Brigance Comprehensive Inventory of Basic Skills.

## Analysis

In order to analyze data collected through out the study, pre-test and post-test information will be graphed for comparison. Cluster pack word recognition will be evaluated by number of words read before and after instruction. In addition, pre-test and post-test data for the areas of word recognition, reading comprehension, and spelling will be compared to assess growth. Results for each student in the study will be presented in the tables using the assigned number.

## Summary

This study will investigate the word recognition and decoding achievement of eight learning disabled children. Each student exhibits characteristics that inhibit easy acquisition of decoding skills for reading. Students will be instructed using the Glass Analysis for Decoding Only Method as a primary method for decoding instruction. Throughout a five month period, data will be collected to tabulate the learners' growth. Results will show that Glass Analysis has a favorable impact on the decoding ability of younger students with learning disabilities.

# Chapter 4
## Analysis and Interpretation of the Data

This study was designed to evaluate the effectiveness of Glass Analysis for Decoding Only as a method for teaching word decoding skills to primary age learning disabled students. Throughout the study's duration, a convenience group of eight second and third grade students receiving special education services in a self-contained classroom served as subjects. The Glass Analysis for Decoding Only Method was the primary instructional focus for teaching decoding skills to the students.

The data gathered was used to answer the following research questions:

Question 1-- Will students be able to decode or recognize more words from each "cluster pack" in Glass Analysis for Decoding Only after five instructional sessions compared to decoding skills prior to instruction?

For each cluster pack students were asked to read all of the words from the cluster pack. Responses were recorded on a cluster pack word list. After five instructional sessions using the Glass Analysis For Decoding Only Method, a post-test was administered. Cluster pack words were presented in a random order and once again responses were recorded. A total of sixteen cluster packs were presented during the

study. Tables 1 through 8 show results of each students' pre and post-test scores in terms of total number correct as well as percentage correct.

Table 1--Cluster Pack Word Recognition

| Student | Pre-test Total Correct | Post-test Total Correct | Pre-test Percentage | Post-test Percentage |
|---|---|---|---|---|
| ing | 0 | 11 | 0 | 69 |
| et | 5 | 17 | 29 | 100 |
| it | 9 | 15 | 56 | 94 |
| ot | 6 | 14 | 28 | 88 |
| im | 10 | 14 | 69 | 88 |
| op | 10 | 13 | 63 | 81 |
| an | 14 | 16 | 88 | 100 |
| ay | 8 | 16 | 50 | 100 |
| ad | 10 | 15 | 63 | 94 |
| am | 11 | 15 | 69 | 94 |
| un | 12 | 15 | 75 | 94 |
| in | 11 | 15 | 69 | 94 |
| ap | 8 | 13 | 50 | 81 |
| and | 7 | 12 | 44 | 75 |
| ack | 8 | 16 | 50 | 100 |
| un | 11 | 16 | 69 | 100 |

Table 2--Cluster Pack Word Recognition

| Student | Pre-test Total Correct | Post-test Total Correct | Pre-test Percentage | Post-test Percentage |
|---|---|---|---|---|
| ing | 0 | 10 | 0 | 63 |
| et | 4 | 9 | 24 | 53 |
| it | 6 | 9 | 38 | 56 |
| ot | 0 | 11 | 0 | 69 |
| im | 7 | 15 | 44 | 94 |
| op | 0 | 10 | 0 | 63 |
| an | 8 | 14 | 50 | 88 |
| ay | 6 | 16 | 38 | 100 |
| ad | 5 | 13 | 31 | 81 |
| am | 11 | 16 | 69 | 100 |
| un | 12 | 16 | 75 | 100 |
| in | 9 | 16 | 56 | 100 |
| ap | 11 | 15 | 69 | 94 |
| and | 8 | 13 | 50 | 81 |
| ack | 12 | 16 | 75 | 100 |
| um | 12 | 16 | 75 | 100 |

Table 3--Cluster Pack Word Recognition

| Student | Pretest Total Correct | Posttest Total Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 2 | 13 | 13 | 81 |
| et | -- | 15 | -- | 82 |
| it | 5 | 14 | 31 | 88 |
| ot | 1 | 11 | 6 | 69 |
| im | 7 | 14 | 44 | 88 |
| op | -- | 12 | -- | 75 |
| an | 5 | 16 | 31 | 100 |
| ay | 6 | 13 | 38 | 81 |
| ad | 6 | 14 | 38 | 88 |
| am | 8 | 16 | 50 | 100 |
| un | 6 | 14 | 38 | 88 |
| in | -- | 11 | -- | 69 |
| ap | 10 | 15 | 63 | 94 |
| and | -- | 14 | -- | 88 |
| ack | 10 | 9 | 63 | 56 |
| um | 10 | 15 | 63 | 94 |

Table 4--Cluster Pack Word Recognition

| Student | Pretest Total Correct | Posttest Total Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 4 | 16 | 25 | 100 |
| et | 13 | 17 | 76 | 100 |
| it | 11 | 16 | 69 | 100 |
| ot | 4 | 16 | 25 | 100 |
| im | 12 | 16 | 75 | 100 |
| op | 13 | 16 | 81 | 100 |
| an | 12 | 16 | 75 | 100 |
| ay | 12 | 16 | 75 | 100 |
| ad | 8 | 16 | 50 | 100 |
| am | 14 | 16 | 88 | 100 |
| un | 12 | 16 | 75 | 100 |
| in | 13 | 16 | 81 | 100 |
| ap | 7 | 16 | 44 | 100 |
| and | 16 | 16 | 100 | 100 |
| ack | -- | 16 | -- | 100 |
| um | 14 | 16 | 88 | 100 |

Table 5--Cluster Pack Word Recognition

| Subject | Pretest Total Correct | Posttest Total Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 0 | 4 | 0 | 25 |
| et | 0 | 1 | 0 | 6 |
| it | 1 | 4 | 6 | 25 |
| ot | 0 | 7 | 0 | 44 |
| im | 2 | 5 | 13 | 31 |
| op | 2 | -- | 13 | -- |
| an | 4 | 7 | 25 | 44 |
| ay | 0 | 4 | 0 | 25 |
| ad | 0 | 7 | 0 | 44 |
| am | 5 | 8 | 31 | 50 |
| un | 0 | 5 | 0 | 31 |
| in | 0 | 6 | 0 | 38 |
| ap | 0 | 8 | 0 | 50 |
| and | 3 | 4 | 19 | 25 |
| ack | 3 | 4 | 19 | 25 |
| um | 5 | 11 | 31 | 69 |

Table 6--Cluster Pack Word Recognition

| Subject | Pretest Total Correct | Posttest Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 0 | 0 | 0 | 0 |
| et | 0 | 1 | 0 | 6 |
| it | 0 | 4 | 0 | 25 |
| ot | 0 | -- | 0 | -- |
| im | 0 | 0 | 0 | 0 |
| op | 0 | -- | 0 | -- |
| an | 0 | 7 | 0 | 44 |
| ay | 0 | 0 | 0 | 0 |
| ad | 0 | 3 | 0 | 19 |
| am | 0 | 3 | 0 | 19 |
| un | 0 | -- | 0 | -- |
| in | 0 | 1 | 0 | 6 |
| ap | 0 | 0 | 0 | 0 |
| and | 0 | 0 | 0 | 0 |
| ack | 0 | 0 | 0 | 0 |
| um | 0 | 1 | 0 | 6 |

Table 7--Cluster Pack Word Recognition

| Student | Pretest Total Correct | Posttest Total Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 7 | 14 | 44 | 88 |
| et | 6 | 7 | 35 | 100 |
| it | 8 | 12 | 50 | 75 |
| ot | 3 | 16 | 19 | 100 |
| im | 9 | 14 | 56 | 88 |
| op | -- | 12 | -- | 75 |
| an | 7 | 10 | 50 | 63 |
| ay | 11 | 16 | 69 | 100 |
| ad | 4 | 11 | 25 | 69 |
| am | 12 | 16 | 75 | 100 |
| un | 7 | 15 | 44 | 94 |
| in | -- | 13 | -- | 81 |
| ap | 10 | -- | 63 | -- |
| and | 11 | 16 | 69 | 100 |
| ack | 9 | -- | 56 | -- |
| um | 10 | 16 | 63 | 100 |

Table 8--Cluster Pack Word Recognition

| Student | Pretest Total Correct | Posttest Total Correct | Pretest Percentage | Posttest Percentage |
|---|---|---|---|---|
| ing | 1 | 10 | 6 | 63 |
| et | 4 | 10 | 24 | 59 |
| it | 7 | 13 | 44 | 81 |
| ot | 3 | 13 | 19 | 81 |
| im | 11 | 13 | 69 | 81 |
| op | -- | 9 | -- | 56 |
| an | 9 | 14 | 56 | 88 |
| ay | 5 | 13 | 31 | 81 |
| ad | 5 | 9 | 31 | 56 |
| am | 8 | 13 | 50 | 81 |
| un | 8 | 12 | 50 | 75 |
| in | 7 | 10 | 44 | 63 |
| ap | 8 | 12 | 50 | 75 |
| and | 7 | 12 | 44 | 75 |
| ack | 8 | 16 | 50 | 100 |
| um | 8 | 10 | 50 | 63 |

Five of the eight study participants consistently improved in their ability to decode each group of cluster pack words after the five instructional sessions. Students #1, #2, #4, #7, and #8 showed marked improvement for each cluster pack.

Student #3 improved for all but one of the cluster packs presented. For the "ack" cluster, she had one less correct response. Yet, student #3 responded well overall to the Glass Analysis for Decoding Only Program. Her post-test percentage scores ranged from a low of 69 percent to a high of 100 percent.

Although student #5 increased his word recognition scores consistently throughout the study, his scores suggest a difficulty with the Glass Analysis for Decoding Only Method. His post-test scores ranged from six percent to 69 percent. Student #5 exhibits learning characteristics that may have limited his acquisition of decoding skills. For example, student #5 is easily distracted and has difficulty focusing on instruction.

Student #6 showed little improvement in his ability to decode the cluster pack words even after five instructional sessions. His post-test percentage scores ranged from zero percent to forty-four percent. Notably, throughout the study he was unable to identify or decode any of the cluster pack words for the pre-test. Occasionally, student #6 was able to produce initial consonant sounds or identify certain letters in the words presented. At the end of the study, he was able to read a total of twenty words out of the sixteen cluster packs.

Research questions two through five focused on specific areas of achievement: word recognition, reading comprehension, listening comprehension, and spelling. Pre-test assessments were conducted at the beginning of the study utilizing the Jerry John's Basic Reading Inventory (Johns, 1997) and the Brigance Comprehensive Inventory of Basic Skills (Brigance, 1983). These same assessments were administered after five months of instruction in the Glass-Analysis for Decoding Only Method.

Question 2-- Will students show improvement in Word Recognition as measured using the Jerry John's Basic Reading Inventory ( Johns, 1997) after receiving instruction in Glass Analysis for Decoding Only?

Table 9

Word Recognition Instructional Levels

| Student | List Pre-tests | List Post-tests | Passages Pre-tests | Passages Post-tests |
|---|---|---|---|---|
| #1 | PP | 1 | K | P |
| #2 | K | P | K | P |
| #3 | PP | P | K | 1 |
| #4 | 2 | 2 | 1 | 2 |
| #5 | K | K | K | K |
| #6 | K | K | K | K |
| #7 | P | 2 | K | 2 |
| #8 | P | 1 | K | P |

Question 3-- Will students demonstrate improvement in reading comprehension levels as measured using the Jerry John's Basic Reading Inventory after receiving instruction in Glass Analysis for Decoding Only?

Question 4--Will the students' level of listening comprehension improve as measured using the Brigance Comprehensive Inventory of Basic Skills after receiving instruction in Glass Analysis for Decoding Only?

Table 10

Reading Comprehension, Listening Vocabulary, and Listening Comprehension Instructional Levels

| Student | Reading Comp. Pre-test | Reading Comp. Post-test | Listening Vocab. Pre-test | Listening Vocab. Post-test | Listening Comp. Pre-test | Listening Comp. Post-test |
|---|---|---|---|---|---|---|
| #1 | K | 1 | 4 | 4 | P | 3.6 |
| #2 | K | P | 3 | 4 | P | 1 |
| #3 | K | 1 | 2 | 5 | 1.6 | 3.6 |
| #4 | 2 | 3 | 1 | 5 | 1 | 3.6 |
| #5 | K | K | 2 | 3 | P | 1.6 |
| #6 | K | K | 2 | 2 | 1.6 | 2.6 |
| #7 | K | 3 | 1 | 4 | 1.6 | 2.6 |
| #8 | K | 1 | 2 | 4 | 1.6 | 1 |

Question 5-- Will the students' level of spelling achievement demonstrate growth as measured using the Brigance Comprehensive Inventory of Basic Skills (Curriculum Associates, 1983) after receiving instruction in Glass Analysis For Decoding Only?

Table 11--Spelling Instructional Levels

| Students | Pre-test | Post-test |
|---|---|---|
| #1 | 3 | 2 |
| #2 | 3 | 3 |
| #3 | 2 | 2 |
| #4 | 3 | 3 |
| #5 | K | 1 |
| #6 | K | K |
| #7 | 2 | 2 |
| #8 | 2 | 2 |

An inspection of Tables 9 through 11 shows the following:

Student #1 improved in four of the six areas assessed. Her reading achievement improved in both word recognition and listening comprehension. However, her spelling dropped one instructional level.

Student #2 improved in five of the six areas assessment. Overall, reading achievement improved slightly. Her spelling score remained constant.

Student #3 improved in five of the six areas assessed. Her spelling score remained constant.

Student #4 improved in four of the six areas assessed. His word recognition score and his spelling score remained constant. His most significant growth appeared in the listening vocabulary and comprehension areas.

Student #5 improved in three of the six areas assessed. His reading achievement remained constant. However, his listening vocabulary, listening comprehension, and spelling scores indicate growth.

Student #6 improved in one area. His listening comprehension score improved by one year. All other scores indicate no change.

Student #7 improved in five of the six areas assessed. His comprehension levels show significant growth. For reading comprehension his pre-test score placed him instructionally at the Kindergarten level. His post-test score was at the third grade level. In fact, his reading scores showed improvement in all areas assessed. The only constant score for student #7 was in the area of spelling. It is important to mention that student #7 was prescribed medication for attention deficit hyperactivity disorder during this study.

Student #8 showed improvement in four of the six areas assessed. His reading scores improved for word recognition and comprehension. His listening vocabulary

showed growth. His spelling score remained constant, but his listening comprehension showed slight regression.

In a review of the research, the following findings can be reported:

~ Seven of the eight students were able to recognize more words after five instructional sessions.

~ Six of the eight students showed improvement in Word Recognition after instruction.

~ Six of the eight students showed improvement in Reading Comprehension after instruction.

~ All of the students improved in overall Listening Comprehension.

~ One student improved in the area of spelling. One student showed regression. The other six students' scores remained constant.

In summary, the results are favorable for overall reading scores after Glass Analysis for Decoding Only instruction. It was found that six of eight students showed improvement in reading achievement. An examination of results from the words recognized in the cluster packs shows that these same six students responded well after instruction. The two students exhibiting the most difficulty recognizing cluster pack words showed no growth in reading achievement.

Study results also show that Glass Analysis for Decoding Only had no favorable impact on spelling achievement for these students. Six of the eight students' spelling

scores remained constant. One student's scores improved; and one student showed regression.

The premise of this study was that students would improve their ability to decode or recognize cluster words in each cluster pack. Word recognition was expected to improve marginally as was reading comprehension. Furthermore, spelling levels were anticipated to increase, on average by one level.

Results confirm that word recognition and reading comprehension were favorably impacted by Glass Analysis For Decoding Only instruction. However, spelling achievement did not improve in conjunction with this method.

# Chapter 5
# Summary, Findings and Conclusion

## Summary

Finding the most effective method to teach decoding skills can be a difficult challenge. In particular, special educators are faced with a vast array of choices when selecting materials that will help provide effective instruction to their students with reading disabilities. Knowing which methods work will help to focus that selection. Glass Analysis for Decoding Only is one of many methods available for teachers to use for instruction of students with disabilities. This study was designed to examine the effectiveness of Glass Analysis for Decoding Only on primary aged students with learning disabilities. A convenience group of eight second and third grade students receiving instruction in a self-contained special education classroom served as subjects for this study. For a period of five months students received Glass Analysis instruction as their primary method of decoding instruction. Research examined the effect of this instruction on the student's achievement in word recognition, reading comprehension, listening comprehension, listening vocabulary, and spelling. Pre-test and post-test assessments were conducted using the Jerry John's Basic Reading Inventory (Johns, 1997) and the Brigance Comprehensive Inventory of Basic Skills. (Brigance, 1983) Glass Analysis for Decoding Only appeared to have a positive effect on overall reading achievement for six

out of eight study participants. Spelling achievement, however, was unaffected by this method of instruction.

## Conclusions

On the basis of this study, it was concluded that Glass Analysis for Decoding Only is an effective option for teaching decoding to students with reading disabilities. Six out of eight students showed progress in overall reading achievement after instruction in sixteen cluster packs. However, results of this study suggest that younger students with learning disabilities are not favorably impacted for spelling achievement as a result of Glass Analysis instruction.

## Discussion

Glass Analysis for Decoding Only is a systematic, easy way to teach decoding skills. When students are familiar with the format of instruction, cluster pack presentation can be accomplished in about ten minutes. Glass Analysis for Decoding Only can be used in conjunction with other reading materials and methods in order to provide a spectrum of instructional opportunities for learners with disabilities. Glass Analysis for Decoding Only may serve as a small part of an all encompassing reading program or as a systematic, intensive decoding method that stands alone. For example, Glass Analysis would be an ideal option for in-class support or pull-out instruction in a resource center program. It is a compact program, easy to transport from classroom to classroom as necessary. Furthermore, since it takes only minutes to teach it could serve well when time is a factor.

Ideally, Glass Analysis for Decoding Only should be supplemented with a variety of application opportunities as well as comprehension instruction. Still, Glass Analysis remains an effective option for decoding instruction.

## Implications for Future Research

Research geared toward the Glass Analysis for Decoding Only Method is limited. In a review of literature, three investigations revealed mixed findings on Glass Analysis for Decoding Only Method's impact on reading and spelling achievement. In these studies, significant growth was not substantiated. (Walsh, 1991; Barger, 1992; Poe, 1984) Yet, reading comprehension results approached significance in favor of the Glass Analysis for Decoding Only Method. (Walsh, 1991) Oral segmentation ability was also positively affected. (Poe, 1984)

Results of this study favor Glass Analysis for Decoding Only as an option for decoding instruction. Although Glass Analysis was the primary method of instruction for this study, other reading programs were utilized as well. For that reason, future investigations could include evaluations of the program as a whole rather than focusing on the Glass Analysis for Decoding Only element. Future investigations could also concentrate more fully on word recognition and fluency. Lastly, future investigations should endeavor to encompass a larger study population over a longer duration.

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