

Effectiveness of PowerPoint Presentation as an Instructional Delivery System Paired with  
Direct Instruction for Teaching Reading to Students with Specific Learning Disabilities

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### **Abstract**

The purpose of this study was to examine the effectiveness of a direct instruction method on the reading ability of a student identified with a specific learning disability in reading. Two interventions were implemented: (1) Phase 1 intervention measured the effectiveness of direct instruction on teaching the days of the week in sequence by using flashcards and a video. Having no positive effect using the video, a PowerPoint presentation was implemented with success. (2) Following successful results of Phase 1 intervention, a Phase 2 intervention was implemented, pairing a PowerPoint presentation with direct instruction to determine the effectiveness on reading ability. Constants for both interventions included the same participant, a behavior plan, observations, interviews, pre- and post-assessments that were recorded and graphed in an AB design. Results of Phase 1 were positive while Phase 2 showed more modest results however, results for both interventions demonstrated success and promise in with increases in the student's reading ability.

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The effectiveness of two interventions is addressed in this paper. The first intervention is based on work completed during reading coursework conducted in spring of 2009 that was part of a master's degree program. The previous intervention was designed as a behavior intervention plan to implement a feasible intervention to teach the days of the week to a student who was struggling with remembering the days of the week in correct sequence. At the time of the initial intervention, the participant was a six-year-old kindergarten student. The current, second intervention is an extension of the first, designed to evaluate the effectiveness of PowerPoint presentation paired with direct instruction for teaching reading to the same student from the previous intervention. A considerable amount of time had passed between interventions. During the second intervention, the student was an eight-year-old, second grader who continued to show progress in his reading abilities.

### **Direct Instruction Defined**

To define Direct Instruction, the following description from Englemann is being used (<http://psych.athabascau.ca/html/387/OpenModules/Engelmann/glossary.html#di>).

The teacher is in face to face contact with the students, often in small groups in a semi-circle. The teacher is in control of the interaction, telling, showing, modeling, demonstrating and prompting rapid active responding of the learners.

Teachers follow carefully constructed scripts that have been designed to maximize learning and minimize confusion through faultless instruction.

Implementation involves frequent systematic assessment. (p. 1)

Using Direct Instruction (DI) to teach reading involves scripted lesson plans that adhere to a routine of the teacher reading the script line by line and students responding to the lesson. During a casual conversation with a university instructor, formerly a reading specialist, it became clear that the current view of DI is extremely negative. This instructor does not see much merit in this method of learning. The instructor stated that DI disregards the teacher as a positive factor in student learning and places too much emphasis on scripted lessons. Another teacher from an Appalachian middle school stated that DI disregards teachers' ability to use "teachable moments" during instruction.

A plethora of instructional strategies and methods exist today. Educators and researchers have argued about the best instructional method(s) to utilize to increase subject content knowledge for students of all ages (Coyne, Zipoli, Jr., Chard, Faggella-Luby, Santoro, & Baker, 2009; Iver & Kemper, 2002; Kim & Axelrod, 2005; Magliaro, Lockee & Burton, 2005; Ryder & Burton, 2006; Snider & Schumitsch, 2006). A few of the most popular instructional strategies and methods used in classrooms today include constructivist strategy instruction, which is a student-centered, holistic approach to teaching curriculum (Stainback & Stainback, 1992), the whole language approach (Stainback & Stainback), a balanced approach via multiple methods, phonics, multisensory approach (Stainback & Stainback), and DI among many others.

Among all of these approaches, it appears DI is used less seldom as an instructional method for the general education classroom and used mainly as an RTI (response to intervention) for students at risk, low-performers, ESL students and those students from low-income families (Magliaro, Lockee & Burton, 2005; Palfreman Film Group, Inc., 2006; Snider & Schumitsch, 2006).

### **Specific Learning Disability Defined**

The Individuals with Disabilities Education Act (IDEA, 2004), Part A defines specific learning disabilities as:

A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, speak, read, write, spell, or do mathematical calculations. Terms includes conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

Term does NOT include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantages. (pp. 11-12)

“More than 50% of students in the US are identified as having learning disabilities (LD)”

(*Council for Exceptional Children; CEC*, <http://www.cec.sped.org>). Other data reported by the CEC includes the fact that students with LD have weaker abilities in reading, written language and math, possible deficits in metacognition, weaknesses in working memory and average or above average level intelligence

(<http://www.cec.sped.org/AM/Template.cfm?Section=Home&CONTENTID=7702&TEMPLATE=/CM/ContentDisplay.cfm>). This information leads one to consider how the brains of students with learning disabilities work and thus scientific brain research on students with disabilities is an important consideration when discussing these students and their learning. Research about how the brain works might lend itself to the best instructional approaches to implement to maximize students' ability to learn.

Willis (2009) suggests, “The brain’s potential for learning throughout life appears to be associated with information (sensory input) that is successfully recognized as relating to patterns existing in the brain, which is then encoded into these neural networks” (p. 334). Willis states that thinking activities “increase neuronal activity in the prefrontal cortex that is associated with executive functions of higher level cognition...in theory, practice builds permanence” (p. 334).

In essence, DI is a practicing of skills until mastery, and until the student builds their permanence within their neural networks. However, Willis (2009) also states students might retain learning if they are able to see patterns, such as patterns in word prefixes, suffixes, and patterns in sound. The greater the variety of pattern, the greater for increased activity of building new neural networks, and the easier for a student to retain and retrieve information. Whatever instructional methods a teacher uses, based on experiences of success or the preference of the student, by showing patterns in language, words, and sounds to students could increase their reading skills and help them retain information. “The implication is that the more opportunities students have to receive, pattern, and consciously manipulate new information, the greater will be the neural network stimulation and development” (Willis, 2009, p. 335).

### **Literature Review**

Siegfried Engelmann and Carl Bereiter created Direct Instruction 45 years ago as an instructional method to help increase student learning. Controversy and debate about the best instructional method for reading has been an issue for the past 50 years (Ryder & Burton, 2006). According to Ryder and Burton (2006) other methods used in classrooms are the cognitive approach, balanced-reading instruction, and explicit explanation. Snider

and Schumitsch's (2006) research involving 85 Wisconsin teachers revealed many of the non-DI teachers favored student-centered classrooms geared toward student learning styles and concluded only 13% of non-DI teachers believed "scientifically-conducted research should determine best practice when determining best instructional methods" (p. 29).

Many educators have misconceptions about DI. Part of this paper attempts to address these misconceptions by implementing an intervention to improve reading skills of a first-grade student via PowerPoint paired with DI and to survey grade K-3 teachers regarding their perceptions of DI.

There appears limited research on PowerPoint as an instructional delivery system; therefore, most of the research reported here will be of DI and re-creating this instructional method using PowerPoint and tracking progresses through anecdotal and instructional outcome data.

### **History of Direct Instruction**

Direct Instruction is a scientific classroom approach based on B. F. Skinner's behaviorist model. Siegfried Engelmann and his colleagues at the University of Illinois developed Direct Instruction (DI) in 1964 as *Direct-Verbal Instruction*. Since 1964, Engelmann and his colleagues have developed over 60 instructional programs (Adams & Engelmann, 1996).

In 1968, the federal government implemented *Project Follow Through* for students in grades K-3, which consisted of 22 different educational programs in 51 school districts. This project was a continuation of children who had attended Head Start programs; however, the government wanted an answer to which method was the most

cost effective (Tashman, 1994). At the conclusion of *Project Follow Through*, the research showed “students in the DI model showed superior academic, cognitive, and social scores” (Adams & Engelmann, 1996). Children who were taught using DI during this period “blew their peers out of the classroom” (Tashman, 1994, p. 1).

The different approaches implemented and studied during *Project Follow Through* included the behaviorist approach (Basic Skills Models), the cognitive development approach (Cognitive/Conceptual Skills Models), and the psychodynamic approach (Affective Skills Models). Comprising each model were three different instructional approaches used in the project. DI was listed under the Basic Skills model along with Behavior Analysis. Results of the data at the end of *Project Follow Through* indicated that DI was more effective than the other models used in this study with the exception of the Behavior Analysis model (Adams & Engelmann, 1996).

At the conclusion of *Project Follow Through*, the method demonstrating the largest gains was ignored by educators, thus beginning the controversy of using DI in the classroom (Adams & Engelmann, 1996).

### **Concerns About Direct Instruction**

Although the results of *Project Follow Through* indicated that DI was indeed an effective instructional method, there are negative connotations that surround DI. According to Adams (1996), most misconceptions people have are based on myths and misunderstandings of DI. Nine of the major concerns regarding DI include: (1) it is only a rote form of learning, (2) it is only teacher-directed, (3) DI is an outdated form of learning, (4) DI smothers creativity for both teacher and student because of scripted lessons, (5) DI opposes the developmental theories of Piaget and Vygotsky, (6) DI only

benefits low-performers, (7) students work in homogenous groupings, (8) DI promotes passive learning, and (9) DI is costly and time consuming to implement. Specifically, Direct Instruction requires teacher training, and possibly at a cost that most school systems are not willing or are unable to incur. Most educators are currently implementing constructivist methods, a comprehensive/balanced approach, and multi-sensory approaches in the reading curriculum for students in grades K-3. Educators prefer a student-centered classroom as opposed to a teacher led classroom. Such methods as multisensory and constructivist approaches to instruction are student-centered and make use of cooperative learning strategies. Instructional designs based on Vygotsky's theory of the child's zone of proximal development are popular and acceptable to educators as opposed to DI (Snider & Schumitsch, 2006).

Direct Instruction appears not to tap into children's unique learning styles because the focus is on the student learning and mastering each new skill independently and repetitiously. This may prove unbeneficial for many students who have specific ways of learning. Some students might become bored, needing more than just repetition to motivate them to learn. However, it may be teachers are the ones becoming bored and projecting their boredom onto the students.

The teacher needs to understand the method as well as show enthusiasm and give positive reinforcement and corrective feedback to students to ensure all students are engaged in learning. Student learning might be affected by teacher attitudes toward certain methods. The teacher should always consider the student when choosing the instructional approach regardless of his/her own preference. What approach works for a particular student should be implemented to provide that student with the most effective

and motivational format to enhance his or her learning. School systems that promote one type of instructional method do many students a disservice, which could result in student failure because the student does not understand the components of the approach, thus falling behind in learning.

### **Positive Viewpoints of Direct Instruction**

There are reportedly 150 schools in the U.S. that implement DI correctly. One of these schools is Wesley Elementary School in Houston, Texas. In 1975-76, the population of Wesley was 99.5% minority and 90% free or reduced lunch students who were performing either one or two years below grade level. Two years later the students receiving DI instruction were performing 1.5 to 2 years higher than pre-DI students (Adams & Engelmann, 1996). The Wesley school has used DI successfully for over 20 years (Palfreman Film Group, Inc., 2006).

City Springs School in the inner city of Baltimore was a school marked on the probation list of schools on the brink of failure. As reported in the video *City Springs School* (Palfreman Film Group, 2006) had an excellent principal who would not give up on her school. She set the tone for learning by setting high expectations for herself, her teachers, and her students. She believed in the structure of DI and began implementing this instructional method in the reading classes along with behavior management techniques; however, the systematic and structural aspects of DI caused friction among hers and many teachers, resulting in some teachers leaving the school. The principal realized that the implementation of DI is a tedious and difficult process for everyone. DI was a complete change from their current curriculum. Therefore, City Springs principal and teachers visited Wesley school in Texas to observe teachers applying DI. After

recruiting a teacher to teach DI to others and viewing the Wesley School, City Springs began to implement DI in the same format as the Wesley School District (Palfreman Film Group, Inc.).

There is research to support the effectiveness of DI (Kim & Axelrod, 2005; Mac Iver & Kemper, 2002; Rasinski, Homan & Biggs, 2009; Rupley, Blair, & Nichols, 2009; Snider & Schumitsch, 2006). A few of the above mentioned researchers conducted longitudinal studies and suggest true gains, indicating effectiveness is seen after the third year of DI implementation.

DI is a systematic approach to teaching that creates unambiguous instructional lessons. Students learn a given number of lessons within a specific timeframe. However, one might consider time as a positive. Many teachers today are concerned with teaching as much of the curriculum as possible to their students by implementing the best approach that helps their students learn the content, hoping the results are mastery and high scores on high-stake tests. DI is a fast-paced method that increases skill and mastery with less time than other methods. Teachers model the new skill, reinforce the new skill to the students, students then repeat the new skill in unison, and the teacher calls on different students to repeat the new skill. All students master the new skill before continuing onto new material. Why then would teachers not consider a method that increases the potential of mastery in less time?

Another concern previously mentioned was DI smothers the creativity of both the teacher and the student because of the repetitive, scripted lessons. However, many “athletes, artists, musicians, new drivers all use repetition and drills when learning...before performance, practice involves the repetition of particular line, skill,

movement, or composition many times” (Rasinski, Homan & Biggs, 2009, p. 194). This argument lends itself to using DI to build a strong foundation for reading skills. Once this foundation is firmly laid, skills learned and mastered, the student will have the capability to take these new skills and explore, learn, and add more skills to their academic repertoire while increasing their *zone of proximal development*.

### **Implementing Direct Instruction**

The creed of Direct Instruction is “if the student has not learned, the teacher has not taught” (Adams & Engelmann, 1996, p.1). Engelmann believes all students have the ability to learn and if they do not learn, it is not the student who is to blame, but the delivery of instruction. Engelmann states that if the instruction did not work in teaching the student, instructors had better find something else that does work ([http://www.zigsite.com/video/theory\\_of\\_direct\\_instruction\\_2009.html](http://www.zigsite.com/video/theory_of_direct_instruction_2009.html)). Engelmann based his philosophy of Direct Instruction on high expectations for all students and the assumption that all students can succeed.

There are several assumptions of DI. The first is control all variables in students’ performances. Second, students must have IQ’s of 60 or above. Thirdly, students must complete a certain number of lessons by the end of the school year. A fourth assumption is that if educators place and teach DI properly, this method will accelerate learning. A fifth assumption is that if learning expectations are not met, it is not the students’ fault but the fault of the delivery system (Adams & Engelmann, 1996).

Direct Instruction is a highly structured system with many teacher-student interactions. For language/phonics skills, students learn letter sounds before learning the letter name. The teacher divides the class into homogenous groups based on high-,

middle-, and low-performers. The students work on different skill levels of reading within their groups. When the teacher is working on word sounds with the students, she is reading from a scripted book. She shows the pictures of the letters to the students, and they respond in unison when prompted by the teacher. Following is an example of a script from *Reading Mastery I* (Osborn, 1995) for learning the sound *i* as in *if*. (The words in italics are what the teacher will read.)

Touch the first ball of the arrow for *i*.

a. Here's *a new sound. My turn to say it. b. Get ready.* Move quickly to the second ball. Hold. *iii.*

*b. Return to the first ball. My turn again. Get ready.* Move quickly to the second ball. Hold. *iii.*

c. Return to the first ball. *My turn again. Get ready.* Move quickly to the second ball. Hold. *iii.*

d. Return to the first ball. *Your turn. Get ready.* Move quickly to the second ball. Hold. *iii. Yes, iii.*

Return to the first ball. *Again. Get ready.* Move quickly to the second ball.

e. Hold. *iii. Yes. iii.* Repeat e until firm.

*f. Good saying iii. (p. 5)*

A teacher must use caution when using scripted lessons because some students may only be moving their mouth to give the illusion that they are following along. For instance, the student in the present case study admitted that when he was learning the days of the week song along with his classmates, he would just move his mouth so the teacher did not know he could not keep up. The teacher needs to ensure she/he calls on

each student individually to provide assurance that all students are actually learning and not pretending to follow along with the lesson.

Direct Instruction makes use of homogenous groupings of students (Stainback & Stainback, 1992). Heterogeneous groupings do not make sense for DI because students learn each skill separately by applying repetition until they master the new skill. Since teachers present each new skill independently, once a student masters a particular skill, he or she will move on while a student who has not mastered the skill will repeatedly practice it until mastered. Critics of DI believe this format does not build social understanding and cooperative learning among students of all abilities. This is a major concern about DI because, as noted by Snider and Schumitsch (2006), most non-DI teachers favor constructivist approaches in student-centered classrooms.

### **Benefits of PowerPoint**

PowerPoint offers many benefits as an instructional delivery system. The features of PowerPoint include animation, sound, color, graphics, and ability to manipulate text. Using PowerPoint as a teaching tool enables students to begin to learn basic computer skills, and allows students active participation in their learning.. Students can also create storybooks using PowerPoint. The student is engaged in his or her learning while learning the skills of reading and then applying those skills themselves (Parette, Hourcade, Boeckman& Blum, 2008). The possibilities of PowerPoint are endless and only limited by the creativity of the teacher and the student.

By implementing PowerPoint paired with Direct Instruction not only will the lesson revolve around direct, unambiguous instruction but will utilize the multisensory approach to learning by using the students' visual, tactile and auditory means of learning

new information. Using PowerPoint paired with DI might increase student learning as well as lead to schools viewing DI as a possible instructional method for all beginning readers.

### **Reading Specialist's Perception**

Results from a survey from a Reading Specialist, indicated that based on prior teaching experiences, he identified three methods as the most effective approaches for teaching reading. The first method is the comprehensive/balanced approach of teaching the five essential elements of reading: phonemic awareness, phonics, vocabulary, fluency and comprehension. The second approach he found favorable is the guided reading group approach, based on student's interest to encourage motivation for success in reading. The third approach is the multi-sensory approach, which engages students in their learning via visual, auditory and/or tactile/kinesthetic means. Of all reading methods, he believes the comprehensive/balanced approach is the most effective. He believes neither phonics nor whole language approaches alone are as effective as the comprehensive approach of teaching the five essential elements.

*The best way to teach students reading involves the five elements as the base of instruction. This comprehensive/balanced approach must be paired with differentiated instruction that not only meets children in their zone of proximal development, but also taps into the child's different interests and learning styles.*

[Reading Specialist, Study Participant]

### **Summary**

DI has its place in instruction, setting the foundation for basic reading and hard to learn skills. Much like an architect creates a structurally sound building, so too must a

reader build her/his structurally sound reading ability. Once the foundation of reading is established, young readers can and should explore a variety of text enabling them to build higher level thinking skills and become effective and successful readers throughout their academic careers.

Whenever a new skill is learned and the teacher sees students are experiencing difficulty, DI can be implemented to teach these new skills until mastered and then move on with other types of instruction. It is best to have different approaches, no matter how many educators prefer one approach over another. Not all children have the opportunity to attend a preschool or Head Start program before entering kindergarten. Thus, children enter kindergarten at different levels of knowledge and preparation when it comes to reading. Many students of low-income families, those who have no preparation for kindergarten, and children whose first language is not English, tend to have the most difficulty acquiring reading skills and have to play catch up with their peers due to differing levels of schema when beginning school.

Teachers must be willing to adapt different instructional methods, including DI, in their classrooms to increase not only the potential and opportunity for all students to learn, but mastery in the content expected of them in Kindergarten through grade 3.

### **Methods**

The purpose of this study is to measure the effectiveness of using PowerPoint paired with DI to teach reading to a student who has been identified as having a specific learning disability in reading. The methods implemented in prior research were PowerPoint presentation of the days of the week, paired with flashcards of the days of the week using Engelmann's direct instruction method. The methods used in the second

phase of the case study used PowerPoint presentation paired with Engelmann's direct instruction method.

### **Prior Research**

A prior reading intervention (referred to as Phase 1) was conducted to fulfill the requirements of a college course in the author's master's degree program. The current case study (referred to as Phase 2) utilized the same participant. The methods utilized for both interventions (Phases 1 and 2) are presented in the next sections.

### **Prior Intervention (Phase 1)**

This intervention plan was designed to address the target behavior of naming the days of the week for a six-year-old boy. The objective set for the intervention was: given five attempts, the student will correctly state the days of the week in order beginning with Sunday and going through to Saturday with no mistakes.

**Participant.** At the time Phase 1 was implemented, the student was repeating kindergarten. He was held back because the teachers considered him a slow learner and too immature to progress to first grade. After his first year in kindergarten, the student was given an IEP to set the goal of being ready after his second year of kindergarten to move on to first grade.

The student's family history revealed that his mother might have dyslexia; however, she was never formally diagnosed. When she was in elementary school, she took special courses to help improve her reading and reading comprehension skills. The student also has a 13-year-old sister diagnosed with autism.

Relevant information important to the student's lack of preparedness for kindergarten included not attending preschool, his inability to count to ten, recite his

name or his address, and his inability to print his name correctly and independently by his first year of kindergarten.

During an interview with the student's mother, it was revealed the student insisted that he has learned the days of the week in a certain way. His mother was working with him for one year to re-teach the correct sequencing of the seven days. The task of re-teaching something a student has learned or interpreted through learning incorrectly is more difficult than learning new information correctly the first time (Adams & Englemann, 1996). During an observation it was determined that on occasion the student would state the days of the week correctly, but only at his mother's prompting. The mother reported the child will look at her if he is confused or pauses too long between days. When she does not prompt him, even after a prior prompt, he is unable to state the days of the week in proper sequence. Following an observation with the student and mother, the target behavior was revised to: the student will state the seven days of the week in correct sequence beginning with Sunday and going through to Saturday with no verbal or non-verbal prompting.

### **Current Study (Phase 2)**

This single-subject case study attempted to determine the effectiveness of a PowerPoint presentation as an instructional delivery system paired with Direct Instruction for teaching reading to students (in grades K-3) with specific learning disabilities. Five questions regarding the use of PowerPoint and Direct Instruction were explored throughout this study.

1. What is the impact on student achievement using PowerPoint delivery of content as a method of DI?

2. Does delivery of reading instruction using PowerPoint impact the attitudes of educators toward reading instruction?
3. What is the impact of DI on students who struggle with reading/language arts?
4. What is the impact of types of reading instruction on reading disabilities?
5. Does any part of research support the foundational belief of DI: “*if the student has not learned, the teacher has not taught?*” (Adams & Engelmann, 1996, p. 1)

### **Prior Intervention (Phase 1): Baseline Data Collection**

Baseline was established using observations and interviews in order to assess the best type of intervention for the identified target behavior. Instructional outcome data was accumulated during the baseline phase and the average number of days stated in correct sequence was divided by the number of attempts in a particular session. The mean for each session was documented and graphed on a simple line graph to establish a baseline. Sessions were not recorded in succession, but were recorded when the student was available for observations. Baseline data will be reported in the results section.

Assessment was conducted on five different sessions, lasting for 10 minutes each. The first two sessions were assessed away from the student’s home. On five different times, the student was asked to repeat the days of the week in order. He was unable to state all seven days in sequence. The assessment was not how many times the student erred in the sequence, but rather how many days he stated in correct sequence.

The next three sessions were conducted in the student’s home with his mother asking the questions. The observations needed to be conducted in the child’s own environment to assess his behavior in a more realistic manner. It is likely that all sessions

should have been conducted in the student's home; however, observations outside his home and then in his home revealed that his mother was a possible variable in maintaining the student's behavior.

On the first two sessions, the student received no prompting whatsoever. He was asked on five different times to state the days of the week. He stated three to four days in correct sequence on these two occasions. However, observations in the student's home revealed with prompting from his mother, the student was able to complete the correct sequence. Observations also revealed on the fourth session that the mother may have been acting as a positive reinforcement to the student's learning. Specifically, when the student was unable to name the correct sequence, his mother lowered and shook her head, and the student quickly began to repeat the days of the week. His mother prompted him and he completed the sequence correctly. She smiled and told him good job.

During session five, his mother prompted him by mouthing the correct sequence if the student paused too long between days of the week. During session five and on two extra tries beyond the established five times per session, (which are not included in the baseline), he was able to say all the days of the week in succession following prompting from his mother (mouthing correct sequence). Since the target behavior had to be re-established to exclude any type of prompting, any corrected sequence resulting from help from his mother, has been excluded from the baseline data.

The rationale for specifying that no prompting would be permitted was viewed during all observations. First, if the student did not have any prompting from his mother, he was unable to repeat the days of the week. Secondly, the student needs to know the correct sequence without prompting because he will not always have his mother to help

him with his work. Prompting the student is not negative and can be helpful; however, even with prompting for over a year, he remained unable to achieve the correct sequence. Thirdly, sequencing is important in reading and there appears to be a deficiency in the student's reading ability, which could be part of the reason he could not sequence the days of the week.

The intervention implemented was a video on the computer, followed up by days of the week flashcards. The video included a 'days of the week' song, showing the days of the week, and at the end of the video repeating seven days in a week three times. In conjunction with this computer program, flashcards with the days of the week were shown to the student to help reinforce the computer program. He viewed the computer video on five different sessions and followed-up with flashcards to reinforce the correct sequential order.

The computer video and flashcards were chosen because of appropriateness to the student's age, during baseline observations he indicated that he wanted to do "something funner", and actively engaging the student in his learning. This intervention was also chosen because, during baseline observations, the student stated, "my mind can't remember." The computer program and flash card intervention was intended to reinforce the student's memory through visual learning. The assumption was that if he sees what he is learning then he may remember what he has learned. In the past, he was asked to state the days of the week in order without any type of visual aids. The intervention phase introduced both visual learning tasks as well as asking to state what he had just been shown. At the end of intervention, the goal was to have the student state the days of the week without prompting of any type, either verbal or visual. A future goal was then to

have the student start at any point within the week and name the remaining days and the days prior to a particular day.

The projected result after implementing the two intervention strategies is the student will state the days of the week in sequential order beginning with Sunday and going through to Saturday on five different tries with five correct responses. The student will also state the days of the week to his mother on three different tries with three correct responses, without her prompting him. Therefore, the projected results are 100% accuracy or seven out of seven correctly stated. This accuracy is reached on the basis that the student should already know the days of the week; he is adamant he learned them in a certain order (incorrectly), re-teaching him the correct order, and the student's belief that there are only five days in a week.

Observations revealed antecedents maintaining the student's behavior to include television, toys laying around the home in easy reach of the child, which results in distraction, no study structure or established study time to work, and constant prompting from his mother. The consequences of this behavior are the student's inability to learn the days of the week without prompting, his mother needing to re-teach the correct sequential order of days, and the student's age (the days of the week are not so important to a six year old).

Not being able to sequence the days of the week without prompting, may be a sign of a more serious reading problem. However, as stated earlier, there may be no correlation and trying to remember the days of the week in correct sequence is too abstract for him and thus unimportant.

Given all data, the baseline appeared to be stable. The reliability of the data may be somewhat skewed since the student did state correct sequences but were excluded from baseline; however correct sequencing was accomplished through prompting and would not have otherwise been completed correctly without prompting from the mother. Based on observation, interviews and baseline data an intervention to try to correct the skills behavior was implemented.

### **Prior Intervention (Phase 1): Intervention and Data Collection**

Three factors were considered prior to the first intervention. First, the student was asked if he knew why he needed to learn the days of the week. He did not know. The following are types of explanations given to the student: you will know when your favorite television show is on; and when you go to grade school and high school, the teachers will give you assignments on a Monday and the assignment may not be due until Thursday. Upon these explanations, the student stated that he would also need to know the day of his birthday. These explanations were given because it was noted during the prior intervention, one reason the student was not learning the days of the week was that it was an abstract concept and he was not able to relate it to himself.

Secondly, reinforcement sampling was documented by asking the father for ten items the student enjoyed. From the father's list, the student chose his three favorite items (tattoos, sticky note pads and race car pencils).

The third factor considered were the antecedent events maintaining the behavior. The student was not assessed in his own home nor was his mother present during intervention. Intervention occurred outside the student's home, at a table in front of a laptop computer. This provided structure, no distractions of toys or television and enabled

the student to maintain his concentration for the 20-30 minutes of intervention.

According to Engelmann (1980),

The teacher achieves teaching (or changing behavior) *not* by manipulating neurons, the learner's past history, or internal processes of any sort. Rather, the teacher achieves behavioral change only by manipulating environmental events. The remedy must clearly imply manipulation of those environmental events. It must tell teachers what they are doing wrong and what types of different teaching behaviors they should implement. (p. 356)

Therefore, manipulation of the student's environment was necessary if intervention was to be successful. Intervention appeared to have manipulated all antecedent events recorded during baseline.

Throughout the phase 1 intervention, secondary reinforcers were paired with the social reinforcers of praise. A continuous reinforcement (CRF) schedule was established for the student. For the first four sessions, the student was reinforced for every correct day he stated past Wednesday. Since baseline data showed the student already stated Sunday through Wednesday in most cases; he was only reinforced for every correct day past Wednesday.

To increase the student's motivation to state the remaining days correctly, he was reinforced with one sheet of tattoos for every correct day past Wednesday, followed by verbal praise, such as *good job, excellent, great*. To increase the student's motivation further, if he stated the entire week correctly, he would receive the tattoos and one sticky note pad and pencil.

Direct instruction paired with the video was attempted and applied for each lesson. These two strategies were chosen because direct instruction is “used primarily in *hard-to-teach* situations.” (Engelmann, 1980) Each lesson was conducted in the same manner, using a scripted note card to ensure the student heard the same instruction for every session. He was asked to sing along with the days of the week song and was assisted in this task. The song was played again and he sung alone with the video. After viewing the video, the student was twice asked to state the days of the week in correct sequence. Then, the student was shown the days of the week flashcards. Each card was held up to the student to repeat as he ran his finger under each word. He then was instructed to place the cards in correct sequence on two different occasions.

After the flashcard instruction, the student was asked to state the days of the week in correct sequence on three different attempts. He was then asked to state how many days in a week. This format was used for sessions one through four. The rationale for using the scripted note card was for consistency in instruction of practice to ensure there was no ambiguity in communicating instruction to the student (Engelmann, 1980). The independent variables for the intervention were not only the video and flashcard, but direct instruction also acted as an independent variable. This fact made “the accurate implementation of treatment crucial” (Witt, Noell, LaFleur, & Mortenson, 1997) Therefore, “careful execution of presentation designed to teach or establish new behavior” (Engelmann, 1980, p. 4) had to be considered important for the video and flashcard strategies.

Data collection for intervention was established using the same procedure as in the baseline phase. Outcome data was collected regarding correct sequencing. The

student was periodically asked questions during intervention and recorded. The student practiced the days of the week by viewing the video, stating the days of the week from the flashcards and placing the flashcards in correct order. The average number of correct responses after each intervention session was recorded and graphed to provide comparisons between baseline and intervention phases.

The intervention phase was conducted several weeks after baseline data was collected because the student was out of state on vacation. Therefore, intervention occurred from 23 May through 25 May. Because time was a variable, the intervention was conducted in three days, twice per day for sessions one through four and session five was conducted on the third day. Each session lasted between 20-30 minutes.

At the end of the fourth session, the student revealed that the video was too fast. It was recorded and determined that even with singing along with the video, the student would sometimes mix up Thursday and Friday or skip Thursday altogether. Before the fifth session, a PowerPoint presentation of the days of the week was designed for the student. According to Parette et al., (2009) “young children are familiar with and often prefer technology-supported instruction” (p. 395). Parette further states that features of “animation, color, large screen presentation format” (p. 395) of PowerPoint are common features children see in their surroundings. The author focused on pairing a PowerPoint presentation with direct instruction to increase the word recognition of at-risk children. Following this procedure, a PowerPoint presentation was created for teaching recognition of days of the week paired with the continual direct instruction format.

The PowerPoint presentation setup contained a day of the week on individual slides accompanied by sound, such as fireworks, a boom and the wind. A visual

reinforcer appeared at the end of the PowerPoint presentation, stating “Good job (student’s name)”. This statement was accompanied by applause. The presentation was modeled for the student. Then the student directed the presentation along with assistance in stating each day of the week that appeared on screen.

### **Current Study (Phase 2) Baseline and Data Collection**

The second phase of the intervention involved pairing a PowerPoint delivery system using Engelmann’s Direct Instruction method of teaching reading to the same participant from the Phase 1 intervention. The purpose of Phase 2 was to duplicate the positive and successful results involving PowerPoint and DI.

For the second phase of the intervention, three variables from the first phase were implemented, allowing these factors to become constants for both interventions. The first was to re-establish the behavior plan of Phase 1 intervention. Second, PowerPoint was the medium used to aid instruction. Finally, DI was used as the instructional method. These three factors needed to remain constant to aid in measuring the effectiveness of PowerPoint and DI on the student’s reading ability.

**Procedures.** Following DI principles, the lessons always remained within the 30 minute timeframe. There were at times long delays between sessions when the student and researcher did not meet. These were variables that affected the outcome of the research and resulted in limitations that will be discussed following a report of the results.

At the time of the Phase 2 intervention, the student was in the first grade and struggling with reading. He remained pulled out for reading instruction and would have to forfeit his second recess to obtain extra help in reading. His reading level remained between levels E and F.

For Phase 2 intervention, a pre-assessment, formative assessment, and a post-assessment were given to the student. The student was assessed on five parts of reading ability: phonemic awareness, phonics, fluency, comprehension, and vocabulary. For phonemic awareness, the student was assessed on repeating sounds of words. Phonics was assessed using flashcards of first-grade words and unknown words to measure the student's ability to sound out words. Fluency was measured using 120 Dolch sight words and readings from *Reading Mastery II: Storybook 1*. The student's comprehension was assessed using a number of questions asked after reading. The vocabulary assessment contained words from the book *The Cat in the Hat* and *Harold and the Purple Crayon* written on flashcards.

After obtaining baseline, the intervention plan was designed. A PowerPoint presentation of letters based on the DI format was created for phonemic awareness and phonics skills. For each new session, new letters, blends, and sentences were added to the PowerPoint presentation. At the end of intervention, the presentation totaled 162 slides. Flashcards of the 120 Dolch words were created to build fluency and knowledge of sight words, short, grade-level books and *Reading Mastery II: Storybook 1* were read and the student was asked questions about the readings to gauge comprehension.

The PowerPoint presentation was conducted as scripted lessons following the DI method for each lesson. Each lesson lasted 30 minutes; letters were presented on PowerPoint slides in the same format as DI. (See Appendix B) Sight word recitations were timed to help gain fluency, comprehension was gauged following student or researcher readings. Preliminary results indicated an increase in sight words and vocabulary and successful completion of the PowerPoint slideshow. An adjustment to the

slide show was made as the researcher discovered the student was memorizing the order of slides. After several lessons, the slides were once again rearranged in order to maintain the validity of this part of the assessment.

During formative assessment, the student experienced difficulty with *b*'s and *d*'s and *p*'s and *q*'s. However, during post-assessment, the student could distinguish the difference. By showing the student a way to remember *b*'s and *d*'s, he was able to remember and use this mnemonic device to distinguish these commonly misidentified letters. The mnemonic device used was to remember the circle on the *b* is on the right; the circle for the *d* is on the left. Since the student knew his right from his left, this was an easy way to distinguish these letters. However, for other students and through the researcher's experience during student teaching, some students in fifth grade are unable to distinguish right from left and would need a different mnemonic device to learn to distinguish a *b* from a *d*.

For the post-assessment, the student was timed and assessed on the number of sight words he was able to recognize by stating the sight word from the flashcard. The student was able to identify the 120 Dolch sight words within four minutes.

During a summer reading course, the researcher administered several reading assessments to the student. This occurred after the research was completed and before the student began second grade. The findings did not correspond with the researcher's testing of the student using the DI method. The student had increased to reading level G and the researcher was able to see progress made in the student's reading abilities. However, the tests administered during the summer reflected that the student's independent reading level was at primer level.

**Results**

Intervention data revealed the student improved his ability to sequence the days of the week correctly from a baseline range of 3.0 – 4.4 days to intervention range of 5.0 - 6.4 days. Although the projected goal of 5 out of 5 correct responses was not achieved, the student improved his skill during the intervention phase. During the last two sessions, he attained 80% accuracy on attempts to correctly state the days of the week in sequence.

**Phase 1: Baseline Results**

Results from Phase 1 baseline data are presented in Table 1 and represented in Figure 1 as a line graph.

Table 1

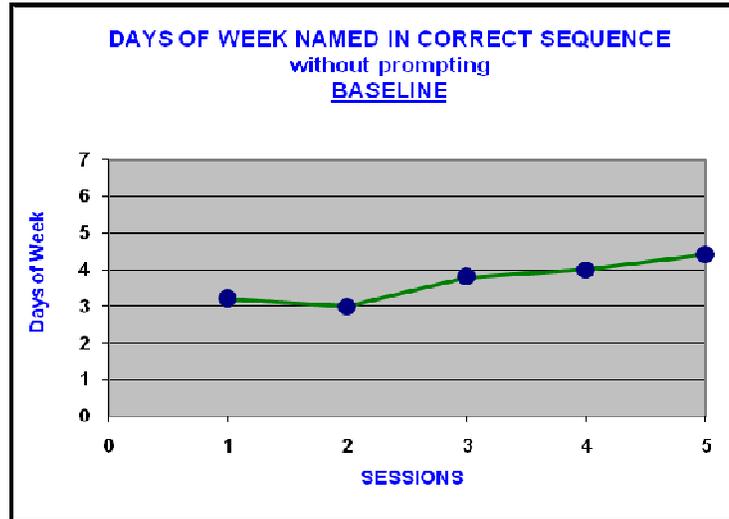
*Baseline Data for Phase 1 Intervention*

**Student: 6-year-old boy (kindergarten)**

**Behavior:** State the seven days of the week in correct sequential order, beginning with Sunday through Saturday without prompting.

<b>Date</b>	<b>Sessions</b>	<b>Attempts per Session</b>	<b>Attempts of correct sequence</b>	<b>Avg of Correct Sequence</b>
4/12	1	5	3,3,3,4,3	3.2
4/19	2	5	4, 2, 3, 3, 3	3
4/24	3	5	4, 5, 4, 3, 3	3.8
4/24	4	5	4, 5,3,4,4	4
4/26	5	5	4, 5, 5, 4, 4	4.4

Figure 1

*Line Graph Representation of Baseline Data*

**Phase 1 intervention results.** During sessions four and five, the Thursday flashcard was hidden from the student. He proceeded to place the cards in correct order, but when coming to where Thursday should be, he stopped. He looked confused and finally stated he was missing a card. Upon being asked how does he know he was missing a card, he stated there are seven days and he only has six cards. He finally stated he was missing Thursday.

The student commented he enjoyed the PowerPoint better than the singing video. He stated it moved slower, and he liked the sound with each day and the applause at the end. He also stated he enjoyed the flashcard game of placing the days in correct order.

During session five, the CRF schedule was reduced to a fixed ratio (FR) schedule, and after every three correct responses (FR3), the student was given reinforcement. By switching from a continuous reinforcement (CRF) schedule to reinforcement for every third correct response (fixed ratio) the expected result was for the student to increase his correct responses to achieve positive reinforcement. The student stated the first attempt

correctly, the next one incorrectly, and the next three in correct order. He received reinforcement only once during the final session.

After session five, the student repeated the days of the week to his mother without prompting. He stated the days in correct sequence on three occasions. The mother’s comment of “good job” and smile acted as positive reinforcement for the student.

The following instructional outcome data reveals an increase in correct responses after the practice phase of the intervention. Calculations of total mean for baseline sessions and intervention sessions showed an improvement in correct sequencing of a total mean of two points. Attempts of correct sequence increased from baseline to intervention from the usual 3 to 5 attempts of correct days in sequence to an increase of 4 to 7 days stated in correct sequence. The data reveals on session five one attempt of only three days in correct sequence. This may be a result of the session being late for the student and his stating he was tired. Intervention data is presented in Table 2.

Table 2

*Intervention Data for Phase 1*

<b>Student: 6-year-old boy (kindergarten) -- (phase B intervention data)</b>				
<b>Behavior:</b> State the seven days of the week in correct sequential order, beginning with Sunday and going through to Saturday without any type of prompting from anyone				
<b>Correct Sequence out of 7 days</b>				
<b>Date</b>	<b>Session</b>	<b>Attempts per Session (after instruction)</b>	<b>Attempts of correct sequence</b>	<b>Avg of Correct Sequence</b>
5/23	1	5	7, 5, 4, 4, 5	5
5/23	2	5	5, 7, 4, 5, 7	5.6
5/24	3	5	4, 4, 4, 7, 7	5.2

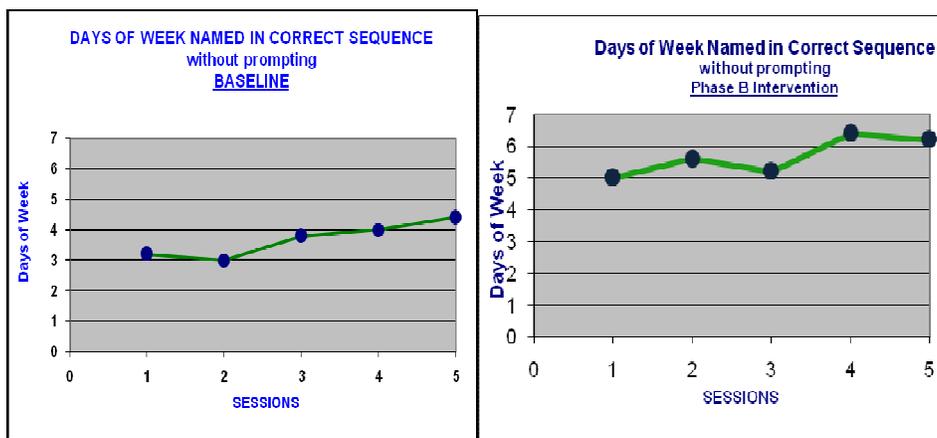
4/24	4	5	7, 7, 4, 7,7	6.4
5/25	5	5	7, 3, 7, 7, 7	6.2

Intervention data was plotted on a line graph (see Figure 2). Comparisons of the baseline and intervention data indicate an increase in the student’s performance.

Although the goal of intervention was not attained, the student showed remarkable improvement considering the limited intervention period of five sessions.

Figure 2

*Line Graph Representation of Phase 1 Intervention Data*



**Phase 2: Baseline Results**

Results from Phase 2 baseline data are presented in Table 3 and Figure 3.

Table 3

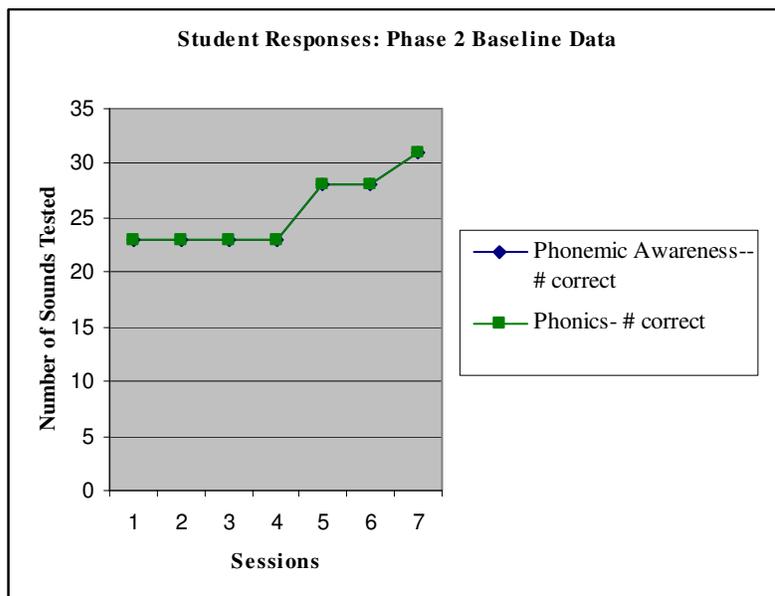
*Baseline Data for Phase 2 Intervention*

<b>Student:</b> 7-year-old boy (1 <sup>st</sup> grade) --Intervention, Pre-assessment: Phase 1
<b>Behavior:</b> Show an improvement of 70% in the five areas of reading by 2 <sup>nd</sup> grade.
Used <i>Cat in the Hat</i> book for reading to measure reading fluency, vocabulary and comprehension

Date	Sessions	Phonemic Awareness-- # correct	Phonics- # correct	Fluency- # correct per 3 min	Vocabulary (# incorrect/# of pages)	Comprehension-# correct
11/29/2009	1	23/36	23/36	15	25/5 pages	4/4
12/5/2009	2	23/36	23/36	17	17/3 pages	4/4
12/6/2009	3	23/36	23/36	25	23/5 pages	4/4
12/6/2009	4	23/36	23/36	17	not tested	4/4
12/8/2009	5	28/36	28/36	27	not tested	4/4
12/9/2009	6	28/36	28/36	27	13/3 pages	4/4
12/13/2009	7	31/36	31/36	28	19/4 pages	4/4

Figure 3

*Line Graph Representation of Phonemic Awareness/Phonics Baseline Data*



**Phase 2 intervention results.** Intervention data reveals improvements in sight word recognition and fluency, phonemic awareness, and phonics following the DI intervention. Vocabulary data was determined to be unreliable data. The book chosen for

vocabulary (*The Cat in the Hat*) was too difficult for the participant as shown in the baseline data and the number of errors recorded every three to fifth page.

During intervention, the participant completed vocabulary tests, the results of which are shown in Table 4. Baseline and intervention data reveal the largest improvement occurred in the areas of phonemic awareness, phonics, and sight word recognition/fluency. Data also indicates the participant had excellent comprehension skills as measured at baseline and intervention. Comprehension was measured by asking questions following reading selections.

Overall, the data from Phase 2 intervention supports the success of Phase 1 intervention. Data indicates an increase in the students' reading ability. However, it must be noted the participant continues to show difficulty with segmenting and blending words beginning with blends such as *pl, bl, pr*. The participant identifies these blends correctly; however, when he tries to segment the word into sounds, he usually restates the blend with a vowel between the two consonants. This was found on assessments completed during the summer and noted in the discussion and conclusion section of this study.

Table 4

*Intervention Data for Phase 2*

<b>Student: 8-year-old boy (1<sup>st</sup> grade, begins 2nd grade August) --Intervention, Post-assessment:</b>						
<b>Phase 2</b>						
<b>Behavior:</b> Show an improvement of 70% in the five areas of reading by 2 <sup>nd</sup> grade.						
Used <i>Cat in the Hat</i> book for reading to measure reading fluency, vocabulary and comprehension						
<b>Date</b>	<b>Sessions</b>	<b>Phonemic Awareness **</b>	<b>Phonics- Number correct**</b>	<b>Fluency- words per/4 min</b>	<b>Vocabulary***</b>	<b>Comprehension- number correct</b>

6/12/2010	1	36/36	36/36	120	4/10	4/4
6/13/2010	2	36/36	36/36	120	7/10	4/4
6/19/2010	3	36/36	36/36	120	6/10	4/4
6/20/2010	4	36/36	36/36	120	7/10	4/4
6/27/2010	5	36/36	36/36	120	6/10	4/4
7/3/2010	6	36/36	36/36	120	4/10	4/4
7/4/2010	7	36/36	36/36	120	9/10	4/4

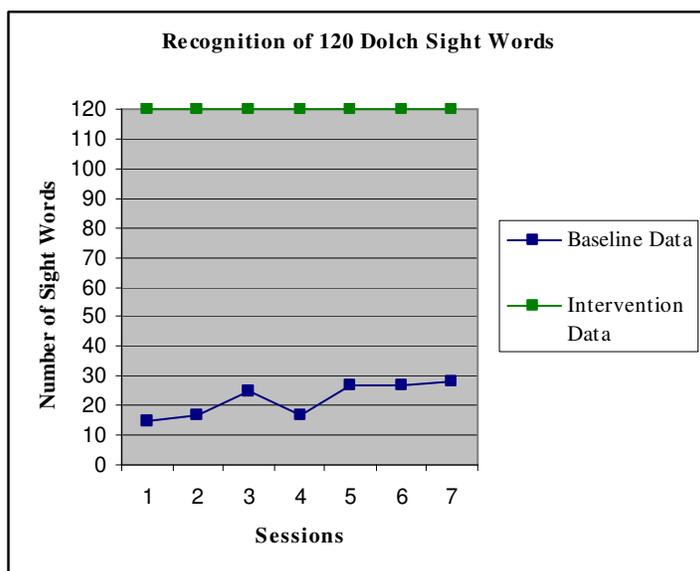
\*\*Student has trouble spelling the words.

He will spell pr as pur; bl as bel; pr as pur. He usually will add vowel between blends when decoding and segmenting blends.

\*\*\*List of vocabulary words 10 each from stories read during intervention.

Figure 4

*Line Graph Representation of Phase 2 Baseline/Intervention Data*



Phonemic awareness and phonics recognition baseline data indicate a mean of 25.57 correct letters and letter combination out of a total of 36. Table 4 reveals the

student's identification and recognition on phonemic awareness and phonics tasks increased to 100%. He increased his performance by 10.43 points to achieve all 36 letters and letter combinations of sounds and pronunciations.

The most impressive gain was demonstrated in the student's fluency rate for the 120 Dolch sight words. Baseline data indicated the student had poor identification of sight words that all first grade students should know. His baseline mean was 22.28 and intervention mean was 36. The student increased his fluency and identification of 120 sight words by 22.28 points.

Data for vocabulary is not reported because vocabulary was tested differently for the baseline and intervention phases. As stated earlier, vocabulary for baseline was taken from *The Cat in the Hat*. The book was deemed too difficult for the student at the time; therefore, during intervention, the student took vocabulary assessments of 10 words per session. The student was given words to spell and the results were recorded (Table 4).

Based on baseline and intervention data, student shows remarkable comprehension skills as opposed to his actual reading skills. Although he is a slow reader because of his difficulty in decoding and segmenting words, he is able to answer questions from text read correctly.

## **Discussions and Conclusions**

### **Phase 1 Intervention**

Two intervention strategies were implemented for the phase 1 intervention for several reasons. Children need to learn new skills through different formats in order to apply these skills to real-world context. Repetition of teaching the new skills, such as the days of the week, increases correct responses and helps the student to commit it to

memory. For example, phonics is taught mostly as direct instruction. Once the student has learned the new skill, it is applied to such activities as flashcard work, on-line interactive phonics games, and discovery learning. These different modalities promote memorization, and require the student to cognitively apply the new skills to many real-life contexts, which promotes generalization of the new skill. “Effective teachers provide varied, meaningful practice to ensure student mastery and transfer of a skill to other meaningful situations” (Rupley, Blair, & Nichols, 2009, p.128). “Failure to consider instruction as a variable result in diagnoses that lack specific implications for teaching” (Engelmann et al., 1979, p. 355) became an increasing factor during intervention, one that was not considered completely before and during the first three sessions with the student.

Based on baseline observations and interviews, the video paired with the flashcards was thought to be a good choice for intervention strategies. However, this was not the case during the intervention stage of the research. The flashcards appeared to have a greater effect on the student’s memorization of the correct sequence than the days of the week song. Thus, the unintended result was the flashcards did not act as reinforcement for the video because of the student’s difficulty following along with the song. In retrospect, the PowerPoint presentation should had been created before intervention and the flashcards could have been used as intended—reinforcing the days of the week presentation.

The intervention data appeared stable through session four. Session five resulted in unstable and unreliable data based on the types of strategies used. Reasoning for changing the singing video to the PowerPoint presentation was based on the previously stated reasoning and the singing video being too fast for the student. The ultimate goal of

the intervention was to teach the student the correct sequencing of days; therefore, since the song video was not working for the student as an appropriate learning strategy, the video was stopped and the PowerPoint presentation was introduced.

A relationship between the dependent and independent variables cannot be determined from the AB design of this study. This intervention would need to be generalized to other students, to other types of skills, such as months of the year, and maintained by the participant(s). Secondly, the intervention strategy would need to be maintained throughout the intervention phase and not changed. Changing from a video to PowerPoint resulted in the instability of data during session five. Finally, the visual practice and repetition of intervention may have only acted as a reinforcement of previous practices; therefore, it cannot accurately be stated that this intervention alone resulted in the student's progress.

## **Phase 2 Intervention**

Phase 2 intervention data was collected over the last seven days of the intervention. Considerable time had elapsed between baseline and the seven Phase 2 intervention days. During the interim, the student was taught via DI method using PowerPoint, which proved successful during Phase 1 intervention. For the Phase 2 intervention, the student chose the background colors for each lesson and materials from *Reading Mastery* were used. These included *Reading Mastery II: Storybook 1* and *Reading Mastery 1: Take-Home Book B*. Several stories were read from *Reading Mastery* during the intervention phase. One of the student's favorite stories was "the small bug went to live in a ball" [words used in Engelmann's format with no capitalization].

Teachers in Snider and Schumitsch's (2006) research questioned the quality of these stories and stated these are not setup for SES or ELL students because of the content and what SES and ELL students bring to the classroom in terms of already defined schemas. Most of the stories utilized in the book are about animals. The content appears to be well adapted to any student who is learning to read.

The other issue teachers raised was the quality of the stories. Stories are setup in the DI format, with lines above words, the final "e" at the end of the word is a smaller font than the rest of the letters in the word (i.e., t<sup>ā</sup>ke). Words at the beginning of sentences are not capitalized. However, the point of these books is to teach correct pronunciation and build fluency in reading and not to teach grammatical and capitalization skills.

The *Take-Home Book B* allows the student to practice writing, by first outlining a given phrase and then copying that phrase two or three more times. Many of the PowerPoint slides used in the study were representations of the phrases in this book. Practice of letter sounds, connecting sound to symbol are also features students practice in this book. Repetition and drill are the main components of the take-home book and the storybook reiterates practicing sounds to their symbols (i.e. long "e", "ea", "ee", "-ing", long "o", "-y"). Overall, both books are quality material to teach students how to read by using repetition and identification of sound to symbol to aid in segmenting and decoding words.

**Phase 2 follow up assessments.** A point needs to be made regarding the tests administered to the student in late July and August, 2010. These tests were administered during the summer and not part of the Phase 2 intervention. The student was assessed using these tests to measure increases in reading skills. Tests revealed and parallel the

results of Phase 2 intervention for sight word recognition, vocabulary, and comprehension. The student scored at grade level 2 for sight word recognition and for oral (not read) vocabulary. The results of his comprehension were excellent.

The results of the San Diego Quick Assessment in reading were less positive, as the student scored an independent reading level at the primer level. The test revealed the student had reached frustration at the first grade level. The CORE Graded High-Frequency Word Survey indicated the student was performing on grade level for sight word recognition.

The CORE Phonics Survey (measuring alphabet skills, letter sounds, reading, and decoding skills) and Decoding Survey indicated low scores on consonant blends, variant vowels, multisyllabic words, and low-frequency vowels. These scores do not correspond with the success the student showed during the Phase 2 intervention. However, all tests were timed, conducted in the evening, and occurred during late summer. These possibly could be negative indicators as Phase 2 intervention was not timed for each skill and the intervention occurred over several months. The student also demonstrated negative behaviors when being timed. He would stop periodically, look up, and stated during one test, “my teacher doesn’t time me; only in AR” [Accelerated Reader].

Fluency was assessed using the MASI-R Oral Reading Fluency Measure. This assessment indicated the student continues to need direct, intensive instruction to improve his oral reading fluency skills to gain grade-level fluency.

Phase 2 intervention sessions were conducted both in the morning, early afternoon and evening. It was noted the student did better in the mornings and early afternoons than

during the evening sessions. All attempts were made to ensure intervention occurred in the early afternoon.

Given the intervention and the assessment results, the student showed positive increases in vocabulary and sight word recognition. He remained constant in his comprehension skills, which were above grade level. The results of the decoding assessments indicate more practice is needed in decoding and segmenting words. Implications of these results for this student would be to continue with DI paired with PowerPoint, concentrating on these areas while reviewing areas already mastered.

Overall, both studies proved to be successful for this student, as demonstrated by increases in his reading skills as addressed in these interventions. Phase 1 intervention proved overall more successful than the Phase 2 intervention; however, Phase 2 intervention has its merits indicated by increases in vocabulary and sight word recognition skills. Additional PowerPoint slides and DI lessons would need to be implemented to increase the student's decoding, segmenting, and variant vowel skills. Judging from the success of both interventions, it appears logical to project positive effects of further implementation leading to additional increases in the target skills.

### **Limitations**

Limitations of this research included the timeframe between baseline and intervention data because of student illness, winter weather, and the researcher's work schedule. Although the Phase 1 and Phase 2 interventions showed positive results, these results are based only on one participant. Duplication of study would need to occur with a wider participant base. Another limitation of this study is the author is not a trained DI instructor although all fidelity to follow the DI method was implemented and

maintenance was followed as closely as possible to the structure of DI. Although several limitations were noted, the study warrants consideration for further studies to replicate the intervention with additional participants.

### **Implication for Practice**

This study does not attempt to devalue traditional or more mainstream reading instruction methods but attempts to demonstrate the effectiveness of a scientifically supported instructional method underused in public school systems. The International Reading Association states “There is no single method or single combination of methods that can successfully teach all children to read. Therefore, teachers must have a strong knowledge of the children in their care so they can create the appropriate balance of methods for the children they teach” (IRA brochure, 1999).

The methods briefly discussed earlier in this study have merit for many instructional situations. According to Rupley et al., (2009) “cognitive strategies require higher level cognitive processing” (p. 127) as opposed to a more teacher-directed strategy as in DI. The authors go on to state examples of these strategies as including making predictions, summarizing a story, critical thinking about what is read, and inferences. These higher-order, cognitive skills are covered in the fourth-and fifth-grade standards. To perform well on these standards, students need to read well and comprehend a variety of text. Unfortunately, as the researcher’s teaching experience revealed, many students in the fifth-grade resource room are unable to read well and as a result, are unable to perform higher-order, cognitive skills that are standard for all fifth graders.

Constructivist methods are important in the academic environment to help students create, experiment, and apply critical thinking skills to a variety of subject areas.

However, if students do not have basic reading skills, they may have difficulty achieving the standards required in higher grade levels. How do students learn the alphabet? How do they begin to learn sounds? Not through discovery learning or any constructivist methods. Students learn by drill and skill development. Teachers model, reinforce and provide feedback to students who are learning to read. According to Magliaro et al., (2005) “DI is an instructional approach between teachers and students. Key components of DI include modeling, reinforcement, feedback, and successive approximations” (p. 41). One only can speculate if the students (discussed above) were taught using DI during their primary years, if they would be able to read well. Would implementing DI as an instructional strategy for fifth-grade students to improve their reading skills work?

As long as educators continue to view DI negatively, this potentially successful method will continue to be ignored by educators as an effective and arguably the most effective method to close the learning gap of many students with learning disabilities. It is understandable why many oppose DI. DI is based on a strict behavioral method that many view as disregarding the teacher and hindering teachable moments. One must ask though, how many teachable moments would a teacher have if his or her students are unable to read effectively? Why do educators reject an effective researched-based method that has repeatedly been shown to work when implemented properly? Is it to wait patiently for a “teachable moment”? Is it because DI demands extreme discipline and proper training to teach students how to read well?

If instructed properly, DI should take no more than 30 minutes a day to implement, then the teacher could move on with other lessons. Why must schools jump from one reading program to another? In the past few years, the school where the

researcher completed a student teaching experience has implemented at least four different reading programs. Someone attends a workshop and believes the next new reading program is the answer to all the reading woes. Additionally, different teachers use different reading programs at the school. Recently the researcher observed *Reading 180* being used at a school for seventh-grade students. This approach appears to have characteristics and procedures similar to the DI method, especially the computer based part of this program.

In conclusion, questions posed at the beginning of this study appear not to have been answered completely. For question one, results indicate the impact of PowerPoint delivery of content as a method of DI appeared to hold the student's interest and help him learn the letter sounds, blends, and small phrases. The student eventually directed the presentation himself while repeating the letters, blends, and small phrases on each slide.

Question two was insufficiently answered in this study as there were not enough responses from practicing teachers to draw any conclusions. Only one set of responses have been reported.

Question three showed the impact of DI on a struggling reader as highly effective. Evidence of this is shown in the student's gains in reading to a level G as measured by *Fountas-Pinnell Guiding Reading*. The student joined the general education reading circle and now only reports to the resource room for additional reading guidance.

This study did not sufficiently answer question four regarding the impact of types of reading instruction on reading disabilities. The focus of this study was on DI. Research collected during this study did not compare one reading instruction against another. The last question posed asked if any part of the research supports the foundational belief of

DI: “if the student has not learned, the teacher has not taught (Adams & Engelmann, 1996, p. 1).” This study did not find any overwhelming statements or facts supporting this belief. All research collected either demonstrates that DI is an effective method, equally effective with other methods, or not effective as other methods. Overall, there appear to be more questions than answers about the effectiveness of DI and why many educators continue to disregard the positive findings from *Project Follow Through*.

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## Appendix A

Reading Level Correlation Chart

Grade Level	Reading Recovery	Fountas-Pinnell Guided Reading	DRA	Basal Equivilant	Lexile Levels
Kindergarten	A, B	A	A	Readiness	
	1		1		
	2	B	2	PrePrimer 1	
	3	C	3		
4	4				
Grade 1	5	D	6	PrePrimer 2	
	6				
	7	E	8	PrePrimer 3	
	8				
	9	F	10	Primer	
	10				
	11	G	12		
	12				
	13	H	14	Grade 1	200-299
	14				
	15	I	16		
	16				
Grade 2	18	J, K	20	Grade 2	300-399
	20	L, M	28		400-499
Grade 3	22	N	30	Grade 3	500-599
			34		
	24	O, P	38	600-699	
Grade 4	26	Q, R, S	40	Grade 4	700-799
Grade 5	28	T, U, V	44	Grade 5	800-899
Grade 6	30	W, X, Y		Grade 6	900-999
Grade 7	32	Z		Grade 7	1000-1100
Grade 8	34	Z		Grade 8	

Appendix B

*Examples of PowerPoint slides from lessons*

