

## The Effects of Direct Instruction Flashcards on Sight Word Skills of an Elementary Student with a Specific Learning Disability

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### Abstract

The purpose of this study was to implement and evaluate a Direct Instruction (DI) flashcard system to teach sight word acquisition to a 6<sup>th</sup> grade student with a documented Specific Learning Disability. A multiple baseline design was used across word sets with each student to evaluate the effectiveness of the flashcard procedures. A functional relationship was demonstrated between the use of the strategies and the reading of sight words for the participant. The study showed that DI flashcards are able to be an effective way to teach students with specific learning disabilities (SLP). Both staff and students enjoyed the intervention.

**Keywords:** Specific Learning Disability, DI flashcards, multiple baseline design, literacy, sight words, sight words, edTPA.

### 1. Introduction

Literacy is an important functional life skill[1,2]. People who are shown to be at higher levels of literacy typically make more money throughout their life, have more job success, and are found to have higher levels of self-sufficiency than those at lower rates of literacy. People who are assessed at lower literacy rates are more likely not to have a full-time job, and are more likely to be recipients of food stamps[2].

A learning disability is a neurological disorder; it is a learning disability that results from a difference in the way a brain develops[3,4,5]. Children with learning disabilities have normal or above normal intelligence, and no sensory deficits. To qualify for services, these students must have difficulty in areas taught in the common schools. With appropriate support and intervention, a child with a learning disability can succeed academically and be successful in life[6]. The important thing for parents and teachers to remember is that children with disabilities need to have their learning targeted toward their strengths and that knowledge of their weaknesses will allow for the better understandings

of strategies that will be best suited for the child's learning needs[3].

A classroom procedure to teach discrete skills has been to employ DI flashcards[7,8]. A classroom teacher, instructional assistant, certification candidates or peer can implement this procedure.[8,9,10,11]. A pretest is carried out to determine which words, math facts, letters, or sounds the student doesn't know. These academic materials are then placed on flashcards. One can then divide the DI flashcards into groups of 15 flashcards. The teacher then determines the ratio of known to unknown facts Direct Instruction flashcards. DI flashcard also employs the use of an error correction procedure. Immediate error correction is an important component of Direct Instruction[8,12]. Error correction has been shown to be a data-based and effective strategy to teach a variety of skills, across various populations[13,14,15]. When error correction is employed with DI flashcards, the teacher models the correct response to the flashcard, next, the student and teacher carry this out together. Next, the student must independently provide the correct answer to the

error card. The error card is placed two to three cards back in the stack, so it can be presented quickly after an error has been corrected[10,16,7,18].

Several studies completed in a wide range of classroom settings and student populations have documented the efficacy of DI flashcards. DI flashcards have been effective in teaching math facts [18,19,20,21], sight words[9,10,22,23], letter sounds[24,25] numeracy[26] and spelling[7]. Overall, the use of DI flashcards has been found to be a successful method for teaching academic skills to elementary, middle, and high school students with intellectual disabilities [10,18,27,28], elementary students with learning disabilities or intellectual disabilities [23,29,30], elementary students with behavior disorders [31,32,33], preschool students with various delays[34] and elementary general education students [7, 8,21,34].

The purpose of the present case study was to evaluate a DI flashcard system's ability to teach sight word acquisition to one elementary student diagnosed with a specific learning disability. A second purpose was to extend and replicate our previous research employing the procedure to a similar participant found in our prior research [20, 22,23,36].

## 2. Method

### 2.1 Participant and Settings

Our participant was a 12-year-old male with a documented Specific Learning Disability. He was in the sixth grade at the time of the study. The participant had been provided services in special education in his previous school, but we are unclear about how long he has received services. Attendance was also an issue at his prior school. He is the youngest of 5 children and lives in a home with about 8 others. The participant had IEP goals in reading, writing, math and OT. The student tested below grade level in reading, writing, and math as assessed by the *Woodcock Johnson Psycho-educational Battery*[37] 5 months previous to the intervention. The student was very friendly and willing to learn and enjoyed working one on one with the teacher. He was a positive student and had begun to make huge growth since moving to the school in which the study took place.

The study was conducted at a public elementary school in a low socioeconomic neighbourhood in the Pacific Northwest. The participant was in the general education classroom specific to him 64% of the time and spent the other 36% within a Resource Room. The resource room was located in a corner of the library with a wall of windows facing the hospital next door. Other classes

took place in the library such as 5<sup>th</sup> and 6<sup>th</sup> grade strings class, library and behavior intervention social groups. There were many possible distractions in the room but the student did well managing himself and paying attention throughout the lessons. The groups in which the student was involved in ranged from six people and two teachers to one on one with one teacher throughout the day. The students in the classroom during these groups ranged from kindergarten to sixth grade. A certified special education teacher, one instructional aides, as well as a student teacher were all in the classroom for most of the day.

The study took place in the library at one of the 4 tables when no other classes were in the space. The study took place at one of these tables with the researcher sitting across from the participant. Occasionally during the time of the study, a staff member or student would enter the area and exit quietly. There were several distractions of that nature but the student stayed on task well and did not recognize or give attention to said distractions.

### 2.2 Materials

Materials used during the study included 4 x 5 inch flashcards provided by the *Journeys Common Core Reading Curriculum*[38]of third grade sight words. Different groups of words (sets) were developed for each participant due to their similarities. A data collection sheet was constructed the researcher was also used as well as a pencil.

### 2.3 Dependent Variable and Measurement

The dependent variable was the number of words read. For words to be counted as correct the students had to read the word within five seconds with only one or less self-corrections. If the student appeared distracted or was off-task, the first author covered the card so the word was not visible, redirected the student, asked the student to read the word, and then the five seconds would begin again at the time.

### 2.4 Experimental Design and Conditions

For participant one, a multiple baseline design [39,40]across word sets was used to evaluate the effectiveness of DI flashcards to increase the accuracy of the participant. The participant had a total number of 15 sight words.

#### 2.4.1 Baseline

Prior to the start of the intervention the researcher collected baseline data. The researcher showed the student the flashcards of words on the 3<sup>rd</sup> grade Journeys prescribed sight word list. The

flashcards were shown to the student one-by-one and the researcher marked correct or incorrect responses to each word. Only words receiving an incorrect for all three baseline sessions were words included as part of intervention. During baseline no praise was given to the student for correct answers and no feedback was given to the student for incorrect answers. The students were told do the best they could, and that it was ok if they did not know the answer. The students were praised for displaying on-task behavior during the session and for being hard workers. When baseline was finished, the student was instructed to return to his Resource Room time reading on a computer program called RazKids.

#### 2.4.2 DI flashcards

Each intervention session began after the data collection procedure was completed. The words chosen for the intervention were words that were found to be incorrectly identified by the participant during baseline. Due to the amount of words that were unknown during baseline, the first author chose 15 words total that had similar qualities for teaching purposes. Sets of words were made by grouping 5 words that had similar endings, beginnings or letter combinations or sounds. The researcher gathered a stack of flashcards that contained the words of the most recent set. During set one just the set one flashcards with set one words were used.

The instructor said “this word is \_\_\_\_\_. Sound it out \_\_\_\_\_. What word?” and then had the student repeat the word. This was done for each word and then it was stuck at the back of the new words. This was done about one to two times for each word. Then the words were mixed. The instructor showed the student the card like in data collection. If the student read the word correctly it was placed at the back of the pile. If the word was read incorrectly it was placed two to three cards back. If the word was read incorrectly a second time, the correct answer was modeled again and it was placed one card back again. If the word was read correctly it was placed a 2-3 cards back in the pile. This portion of instruction did not typically last very long because the participant often got the word correct on the first trial.

After Set 1 words were mastered, the reading racetrack procedure then was used at the

beginning of the sessions in order to help with maintenance and generalization. The researcher had two reading racetracks ready by the start of the session. The first racetrack contained only set one words, which had reached mastery. The words were written around the track an equal amount of times in varying order so that the student could not anticipate which word was next just based off a pattern. The participant monitored where he was on the reading racetrack and marked the last word read with the date after one minute. The second reading racetrack contained the set one and set two previously mastered words. The words contained in set one and set two were distributed around the track equally.

#### 2.4.3. Interobserver Agreement

To gather inter-observer agreement, the researcher recorded lessons and trained another person as to what constituted incorrect and correct answers. The observer had a data collection sheet identical to the researcher’s data collection sheet. The observer would watch the videos after the data was collected. The observer filled in the date on the sheet and then used the same procedure as the data collection procedure. If the researcher and the observer both made either a ‘-’ or a ‘+’ they were in agreement. If one marked ‘-’ and the other marked ‘+’ that would be considered disagreement. For the participant, inter-observer agreement was collected a total of four times. The mean agreement was 100%.

### 3. Results

The results for our participants are shown Figures 1 and 2. For Set 1, the mean number of words read correctly during baseline was 0.0 words. During DI flashcards, his mean increased to 5 words read correctly. For Set 2, the mean number of words read correctly during baseline was 0.0. When DI flashcards were implemented, this improved to a mean of 4.8 words read correctly (range 4 to 5 words). For Set 3, the mean number of words read correctly during baseline was 0.0. This improved to 4.17 words correct. For all three sets, our participant’s performance increased to a mean of 4.17 out of 5 words read correctly. His performance ranged of 3 to 5 words read correctly between and across sets when DI flashcards were employed.

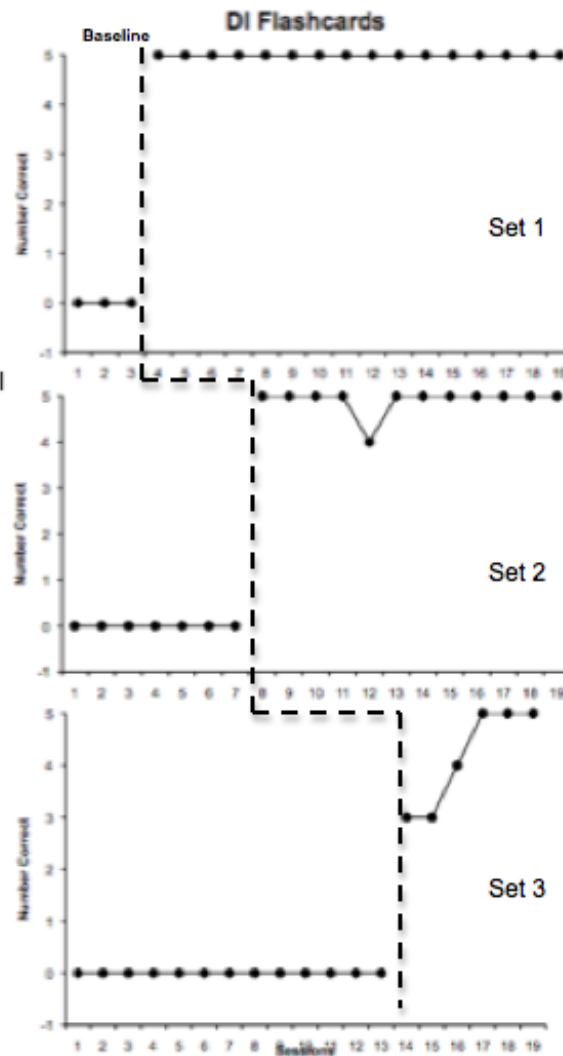


Figure 1: The number of correct words for all three sets for baseline and DI flashcards.

#### 4. Discussion

The present research was able to document the success of DI flashcards with an elementary student with a specific learning disability. The participant had received little sight word instruction prior to the intervention thus it was decided that his set of words contain five words each, in order to teach the student a many words as possible during the time of the study. However, it took a longer amount of time for the student to reach mastery during Set 3 due to interruptions. This participant would be hasty and not take time reading the words and identifying the sounds which lead to his errors. Overall he was very teachable and focused well.

The outcome indicated that DI flashcards could improve the sight word identification skills for an elementary student with learning disabilities. This outcome extends much of our previous research with elementary school students using DI flashcards [20,23,27,28,31,32]. The present outcomes may well inform us that our recent issues with differential

effects with preschool students with disabilities[24,24,26] may well be a function of the age of those participants. In that research, young preschool students were employed. The use of non-overlapping data points has also been employed to determine effective size with single case research [41,42], when calculated against baseline indicating a very effective intervention. This was found for each of our three sets.

There were limitations in the present case report. First, only one student was employed. Due to the ending of the first author’s student teaching these data were unable to be gathered. Finally, it would have important to see how the skills acquired during DI flashcards generalized to the participant’s reading of text. Finally, due to time issues we were unable to assess the maintenance of treatment effects of our procedures. Gathering such data is critical[39] because it provides an additional way to determine lasting effects of our academic interventions. This will need to take place in later research projects.

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