Effectiveness of Direct Instruction Flashcards on Sight Word Identification for a High School Student With a Specific Learning Disability

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The aim of this single-case study was to evaluate the effects of a Direct Instruction flashcard system on the sight word identification of a tenth grader with a learning disability. To appraise the benefits of the intervention, a changing criterion single-subject design was applied. Findings indicated that the student profited greatly from the intervention. Over the course of the intervention, accuracy and automaticity of sight word reading increased remarkably. The paper ends with a critical discussion of the results and provides an outlook for subsequent research activities.

Keywords: **sight words, reading fluency, direct instruction, flashcards, learning disability, single-case study**

Introduction

Students with learning disabilities experience challenges with information processing. When reading, they may struggle with key components required of a fluent and skilled reader including decoding, fluency, comprehension, and the more discrete skills of sound and word structure identification. Because of these challenges, reading instruction and acquisition for this student population may be difficult (Moats, 2004). According to Martin (2008), reading is a common struggle for children with learning disabilities, which may lead to feelings of shame, frustration, and embarrassment for these individuals.

Sight words are words that readers recognize immediately upon seeing the word (O'Connor, 2007). Sight-word reading is an important skill for early readers to master in order to become successful, fluent readers. More advanced

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readers generally do not rely on letter by letter decoding procedures because they are able to effectively recognize spelling features and common letter combinations and patterns (Aaron, 1999). Students need to master the spelling features and the individual sounds within words in order to correctly and fluently identify sight words. Fluent readers are likely to develop automaticity with sight words due to frequent interaction with these words as they appear in literature. As Ehri (2004) explains, words become sight words when they are recognized instantly, without attention to individual sounds or parts of words. Essentially, the more a student reads, the more opportunity students have to practice sight word recognition. Readers with learning disabilities may experience less interaction with text due to limited reading skills and may also be less motivated to engage with print limiting their opportunity to develop sight word automaticity.

Direct Instruction (DI) flashcards is an intervention that has been implemented with students with learning disabilities to build mastery and fluency with sight words (Seines, McLaughlin, Derby, & Weber, 2015). This technique has been effective across a variety of skills and content areas including math facts, sight words, and letter and sound identification (Higgins, McLaughlin, Derby, & Long, 2012). The intervention begins with a baseline phase to identify words unknown by the student. These words are then placed in a deck of flashcards that includes a set ratio of mastered and unmastered words (Seines et al., 2015). The student orally reads the words presented and if an error is made, an immediate error correction is provided. This error correction is a key component to the success of the DI flashcard system. It is composed of a model, lead, and test procedure, conducted by the person administering the intervention (Seines et al., 2015). The flashcard is then placed two to three cards back in the deck and is re-presented to the student to check for mastery. If the card is identified correctly, it is placed at the back of the deck. If the student errors on the card, the correction procedure is repeated and the card is placed a few cards back once again (Shahtout, McLaughlin, Derby, & Arenez 2012). The purpose of this study is to add to the body of empirical evidence on the benefits of using DI flashcards in building mastery and fluency of sight words with a student with a learning disability.

Method

Participant and Setting

The participant in this study was Kyle (name changed to maintain confidentiality), a tenth-grade student who attended reading and English classes in a high school resource room in the Pacific Northwest of the United States. Kyle had a diagnosis of Specific Learning Disability and performed at a fifth-grade reading level. He entered high school reading at a Pre-K reading level and completed his ninth-grade year reading at a fifth-grade reading level. Kyle's teacher

had class-wide reading goals, which included increasing fluency, accuracy, and comprehension. Individually, Kyle's reading goal was to improve his ability to read sight words accurately and fluently. Kyle was chosen for this study by his classroom teacher to work on his goal of increasing the number of sight words he could read successfully. Sight word reading was considered an important skill for Kyle because sight words are a critical foundation to becoming a successful reader in high school classes and a critical life skill. Kyle was generally confident in his academic abilities and eager to learn. He was passionate about art and learning and wanted to be successful in his academic courses.

The study took place at the desk of the Instructional Assistant (IA) in the back corner of the resource classroom. Kyle was comfortable working in this space because he worked there on guided reading lessons daily. In addition to the researchers, there were nine students, an IA, and the classroom teacher in the classroom while Kyle worked on sight word reading. The classroom stayed at a quiet volume during the entirety of the study. Kyle read at a very low volume and was secluded by the researchers' placement at the desk in the back of the classroom. This allowed only the researchers to hear his reading.

Materials

To collect baseline data, a list of sight words was provided by Kyle's classroom teacher that included several words not yet mastered by Kyle. To implement the DI flashcard system, the researchers developed sight word flash cards using three-by-five-inch index cards and hand wrote the target words in bold, black ink. Each card had the sight word written on both sides so that the researchers could see if the word was read correctly or not.

Dependent Variable

The dependent variable in this study was the student's ability to correctly identify sight words presented on the flashcards correctly within three seconds. A response was scored as incorrect if he did not correctly identify the word on the card, or took more than three seconds to respond to the presentation of the sight word. During baseline, the researchers did not tell him the correct pronunciation of the words that he missed because they needed an accurate representation of his current level of mastery of the list. During intervention, the researchers told him the correct pronunciation using the direct instruction correction procedure which included telling him the correct word, asking him to repeat the word, then placing the card a few cards back in the deck for additional practice. The researchers made sure that Kyle did not work on the words outside of his time in session with the researchers by informing the classroom teacher, the IA, and Kyle that he should not do so outside of the sessions with the researchers. Kyle received verbal praise for pronouncing each word correctly.

Data Collection and Inter-Observer Agreement

Data collection included event recording for both the baseline and subphases of the intervention. During baseline, Kyle was asked to read from a list of sight words and each incorrect response was recorded on a data sheet by one of the researchers. During subphases of intervention event recording was used in the same manner after completing the flashcard deck. An incorrect response was recorded by marking an X next to the word on the data sheet and a correct response was indicated by a checkmark.

Inter-observer agreement checks were conducted for 5 of 15 sessions. Reliability data was collected simultaneously with the researchers by the IA by tallying the number of incorrect and correct responses Kyle gave for the sight words. The formula used to calculate inter-observer agreement was the number of agreements divided by the number of agreements plus the number of disagreements, multiplied by 100.

Design

A changing criterion single subject design was used for this study (Kazdin, 1982). Baseline data was recorded during the first three sessions. Data collected during baseline established the criteria for the initial intervention phase. Intervention was implemented starting with the fourth session. During intervention, Kyle was presented with twenty flashcards with fifteen unknown words and five known words in the deck. The mastery criterion for the first phase started at three new words becoming mastered and increased by three new words in all subsequent subphases. This continued until Kyle all fifteen sight words were mastered.

Procedures

Baseline. Prior to baseline, the researchers conducted assessments to determine which words to use by presenting five different lists, all increasing slightly in difficulty, one time through, for three sessions. This list was provided by the cooperating teacher. Each list consisted of twenty-five sight words. Researchers identified words Kyle was missing consistently and constructed a list of twenty words that he did not know. These words were used for baseline and intervention. During baseline, words were presented in the same format as the assessment lists: in a list format on a piece of paper. Kyle read each word on the list and the researchers recorded which words were incorrect on the data collection sheet. Similar to intervention, words answered correctly were marked with a checkmark and words answered incorrectly were marked with an X.

Direct Instruction Flashcards. During intervention, DI flashcards were used to teach Kyle twenty words that were not mastered. The initial subphase of intervention started with a deck that included 12 mastered, easy sight words that Kyle could easily identify and 3 of the new unmastered target words. Throughout the intervention phases the researchers presented each card and

asked Kyle to read the sight word; if he read the word correctly and within three seconds, the card was moved to the back of the card stack. If the word was read incorrectly or if it took more than three seconds, a verbal prompt of "This word is __. What word?" was delivered to Kyle and he would repeat the correct word back. The card would then be placed three cards back into the deck to ensure the word was practiced again.

The mastery criterion for each subphase was three new words from the previous subphase. To assess if the words had been mastered and if Kyle had met the mastery criteria, an assessment would be done following two completions of the entire deck and necessary corrections had been made. The assessment consisted of another run through of the deck and recording if the target words had been read correctly or incorrectly in the same manner as previous data collected in the study.

Results

The results are displayed in Figure 1. During Phase 1, baseline, Kyle elicited zero correct responses across three sessions.

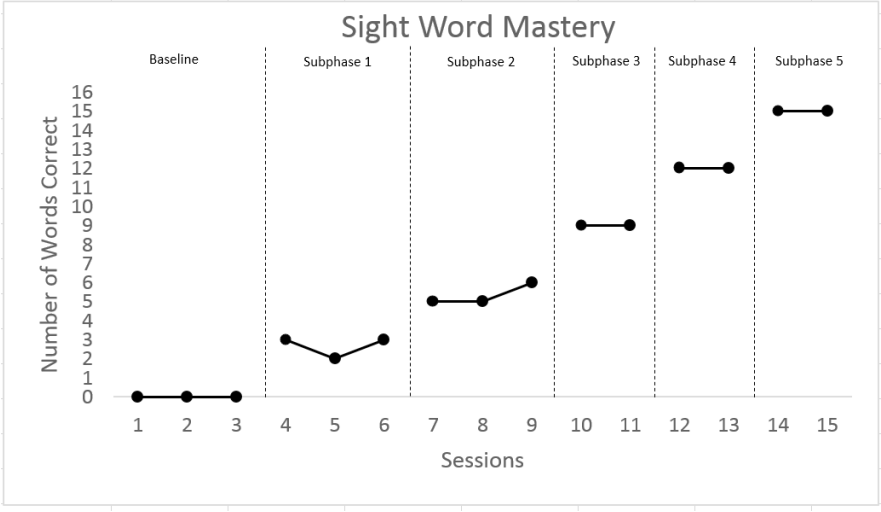

Figure 1. Number of words read correctly.

In the first subphase of the intervention, Kyle read the sight words with 88% accuracy across three sessions. During the second subphase, Kyle read with 88% accuracy again across the next three sessions. In the third subphase, the researchers made the decision to reduce the number of sessions to two because the subject was reading the sight words with 100% accuracy across the first two sessions. During subphase four, the subject read with 100% accuracy across two

sessions. Subphase five resulted in Kyle reading all fifteen target sight words with 100% accuracy across two sessions.

Discussion

Direct Instruction flashcards were an effective intervention for Kyle. His identification of sight words increased significantly and the speed at which he read the words also increased. The combination of both mastery and fluency of sight words was advantageous for Kyle in several of his classes as he is now able to decode and comprehend higher-level texts, according to his classroom teacher. These findings support prior research that indicated DI flashcards are a beneficial supplement to instruction for students struggling with memorization and recall of sets of information (including math facts, sight words, etc.) when used in conjunction with their regularly scheduled instruction (Seines et al., 2015).

Kyle appeared to be an extremely motivated individual who needed little reinforcement or encouragement to engage fully in the intervention. He responded well to specific verbal praise and acknowledgement of the words that he was able to correctly identify during the intervention. As the intervention progressed, Kyle continued to appear eager to participate in the flashcard intervention. Kyle's enthusiasm for the project was a key determinant in the success of the intervention.

The progression of the intervention was effective for this student because he learned and retained information quickly. This was demonstrated by his ability to meet criteria in three consecutive sessions. His rapid mastery allowed Kyle to progress rapidly through each phase of the intervention. The sessions took place on Monday, Wednesday, and Friday. This set-up provided a break between each intervention session. The breaks gave him time to review the sight words and may have played a role in the retention of sight words. Retention of sight words was also demonstrated over Kyle's spring break. His ability to recall previously taught information speaks to the success of this intervention.

Weaknesses of the study included the researchers' inability to directly observe and measure generalization of sight words across classes and maintenance of sight words throughout the school year. This intervention indicated that he had mastered the words and retained them for four weeks but there were no maintenance checks completed following his initial mastery of the last set of three new words, nor retention checks to measure maintenance of sight words over time.

Similarly, the researchers were not able to monitor Kyle's ability to generalize the sight words learned during the intervention to his general classroom reading performance. One reason for completing this study was based on the knowledge that an increased mastery of sight words can lead to increased fluency

(Aaron, 1999). So, the inability to measure whether skills taught were generalized prevents the ability to accomplish one of the main purposes of this study. A future study could measure the impact of sight word recognition and retention on reading across content areas.

Throughout the study, Kyle showed he was highly intrinsically motivated, however, the researchers noticed he worked even more diligently when the researcher elicited specific verbal praise following correct answers. Further, he successfully retained the information and demonstrated mastery of words presented several weeks after the implementation of the intervention. This suggests that a future study could look at the use of contingent specific praise and whether or not it influences the number of correct academic responses.

Finally, the researchers observed Kyle's quick acquisition of academic material and ability to retain information. In the last three subphases of the intervention he was able to demonstrate mastery of all words on the first attempt. This could indicate that the mastery criteria was set too low. If another intervention was to be implemented with a similar format, the criteria should be set at a higher level.

The present study replicates prior research indicating effectiveness of the DI flashcard system on increasing mastery and fluency of sight words and other academic skills (Higgins et al., 2012; Seines et al., 2015). Kyle's enthusiasm and motivation to participate in this intervention as well as teacher reported increases in Kyle's ability to decode and comprehend higher level texts suggests that use of DI flashcards is an effective intervention to consider for increasing foundational academic skills.

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