ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

A COMPARISON OF DIRECT INSTRUCTION FLASHCARDS AND COVER, COPY COMPARE TO TEACH SPELLING TO ELEMENTARY SCHOOL STUDENTS*

Adam Skarr
Gonzaga University
USA
askarr@zagmail.gonzaga.edu

T. F. McLaughlin
Gonzaga University
USA
mclaughlin@gonzaga.edu

K. Mark Derby
Gonzaga University
USA
derby@gonzaga.edu

Karen Meade
Spokane Public Schools
USA
KarenM@spokaneschools.org

Randy Lee Williams
Gonzaga University
USA
williamsr@gonzaga.edu

ABSTRACT

The purpose of this study was to evaluate the methods of CCC and Direction Instruction (DI) flashcards in spelling. The study sought to examine the efficacy of these procedures with both general and special education students. A final purpose was to compare CCC and DI flashcards employing a counter-balanced multiple-baseline design. The participants were three, fourth grade females, one age 9 and the other two 10, with learning disabilities and deemed at-risk. The study was conducted in an elementary resource room classroom in a low-income and Title I elementary school. The behavior measured was correct spelling of core words. A counter-balanced multiple baseline design across students was employed to evaluate student outcomes. The results showed mastery of spelling words with CCC or DI flashcards. Suggestions for future research are provided.

Keywords: learning disabilities, risk-student, core words, spelling, classroom research, counter-balanced multiple baseline design, cover, copy, compare, DI flashcards, data-based-decision making, student research

INTRODUCTION

Spelling remains an important skill for students to learn in school (Graham, 1999; McLaughlin, Weber, & Barretto, 2004). However, schools find it difficult to determine just how important spelling is in relation to the academic areas of reading, writing, math, and science (Ravitch, 2010). Studies have shown though that reading and spelling are synonymous. Students who have trouble recognizing words in reading typically have poor spelling skills (Graham, Harris, & Fink-Chorzempa, 2002). Graham reported that spelling has social value and is seen as a component of literacy. Unfortunately with the increased emphasis in high stakes testing, many educators feel that spelling skills and instruction in spelling have become a very low priority in our schools (Graham, 1983; Hodges, 1982; Ravich, 2010).

* **Author Notes:** This research was completed in partial fulfillment for an Endorsement in Special Education from Gonzaga University and the State of Washington. The author would like to thank the participants, and the classroom teacher, for their cooperation. Portions of these data were presented at the 9th Annual Spokane Intercollegiate Research Conference. The first three authors are in the Department of Special Education at Gonzaga University in Spokane, WA. Requests for reprints should be sent to T. F. McLaughlin, Department of Special Education, Gonzaga University, Spokane, WA 99258-0025 or via email at skarr@zagmail.gonzaga.edu.

Copyright © 2012 SAVAP International

Even though society cannot agree if spelling is important, many students struggle in this area, especially students with learning disabilities (Graham, 1999; Lerner & Johns, 2011). A learning disability is a neurological disorder that results in differences in brain development. Students with learning disabilities often have more difficulty in school due to these differences (Lerner & Johns, 2011; Tanner, 2001). These students also need extra practice and support to account for their disability. Students with learning disabilities often have more difficulty in school to remediate these differences (Swanson, 1999; Tanner, 2001). They also need extra practice because spelling is an encoding process in which a learner must respond without the benefit of a complete visual stimulus; thus, there are fewer clues. Spelling requires concentration on each letter of every word (Mercer & Mercer, 2005).

The most consistent findings about the spelling difficulties for children with learning disabilities often comes from studies which compare normally achieving students with those who have reading problems (Carpenter, 1983; Carpenter & Miller, 1984; Gerber, 1984; Gerber & Hall, 1981; Lennox & Siegel, 1993). Students with learning disabilities spell fewer words correctly than do their normally achieving age-mates, even when differences in IQ have been controlled (Carpenter, 1983; Carpenter & Miller, 1984). Furthermore, in comparison with good readers who do not spell well, poor readers are more likely to produce unrecognizable spelling (Carpenter, 1983; Firth, 1980). The spelling capabilities of children with learning disabilities are more similar to those of younger students (Worthy & Invernizzi, 1990) as well as particular difficulty with morphological structure (Gerber, 1984; Kearney & Drabman, 1992).

Several teaching procedures to assist children having difficulty with spelling have been evaluated (Swanson, 1999). Effective methods used to improve spelling have included cover, copy, and compare (CCC) (Hubbert, Weber, & McLaughlin 2000; McLaughlin, Reiter, Mabee, & Byram, 1991; McLaughlin & Skinner, 1996; Schermerhorn & McLaughlin, 1997; Skinner, McLaughlin, & Logan, 1997). CCC is a self-management strategy used to allow students to practice academic skills repeatedly while allowing self-correction of errors (McLaughlin & Skinner, 1996). This allows the students receive immediate feedback so they do not repeatedly practice a skill incorrectly. CCC also provides a reward for simply being correct (Murphy, Hern, Williams, & McLaughlin, 1990; Nies & Belfiore, 2006). CCC requires the student to look at the academic stimulus (correct spelling of a word, math problem and solution, etc.) and copy the item correctly, cover the stimulus and the copy, write or say it from memory (cover), and compare (look at the correct item and compare his/her answer. If correct, the student moves down to the next word, math program, or stimulus. If the student makes an error, they have to write the problem and its correct solution over three times before moving onto the next word or problem.

CCC has been shown to be effective across a wide range of student populations ranging from students with behavior disorders (Carter, McLaughlin, Derby, Schuler, Everman, 2011; Skinner, Ford, & Yunker, 1991) learning disabilities (Cates, Dunne, Erkfritz, Kivisto, Lee, & Wierzbicki, 2007; Kaufman, McLaughlin, Derby, & Waco, 2011; Murphy et al., 1990), intellectual disabilities (McLaughlin et al., 1991) and general education students (Schermerhorn & McLaughlin, 1996). CCC has been successfully employed in various curricular areas such as spelling (Cates et al., 2007; McLaughlin et al., 1991, math, (Ciesler, McLaughlin, & Derby, 2009) science (Smith, dittmer, & Skinner, 2002), geography (Skinner, Befiore, & Pierce, 1992) and reading (Conley, Derby, Roberts-Gwinn, Weber, & McLaughlin, 2004; Cates, Dunne, Erkfritz, Kivisto, & Wierzbicki, 2007).

Flashcards have also been used as an easy way to teach students discrete skills such as sounds, letter names, important dates in history, sight words, and spelling (Heron, Heward, Cooke, & Hill, 1983; Maheady & Sainato, 1985; Kaufman et al., 2011; Olenick & Pear, 1980; Van Houten & Rolider, 1989; Young, Hecimovic, & Salzberg, 1983). Flashcards have been employed to teach both young children (Hopewell, McLaughlin, & Derby, in press) and older students with a wide range of skills (Ruwe, McLaughlin, Derby, & Johnson, 2011). The use of a flashcard strategy is unique in that, it can be implemented in almost any setting to teach specific skills quickly (VanHouten & Rolider, 1989). The use of direct instruction flashcards has been found to be a successful method for teaching academic

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

skills to children with special needs (Hayter, Scott, McLaughlin, & Weber, 2007; Ruwe et al., 2011; Tan & Nicholson, 1997). Direct Instruction flashcards also include an error correction component like CCC. Also, students receive verbal feedback so that they do not repeatedly practice a skill incorrectly (Brasch et al., 2007). Error correction, an important component of Direct Instruction (Kinder & Carnine, 1991), is a data-based effective strategy to teach a variety of skills, across various populations (Becker, 1977; Carnine, Silbert, Kameenui, & Tarver 2004; Kinder & Carnine, 1991). Finally, an error card is placed two to four cards back in the stack, so it can be presented quickly after an error has been corrected (Basch et al., 2008; Glover, McLaughlin, Derby, & Gower, 2010; Hayter et al., 2007; Ruwe et al., 2011). Several classroom research articles have documented the efficacy of DI flashcards in teaching math facts (Hayter et al., 2007) and sight words (Ruwe et al., 2011; Erbey, McLaughlin, Derby, & Everson, 2011).

The purpose of this study was to evaluate the methods of CCC and DI flashcards for spelling. The study aimed to examine the efficacy of these two procedures with both general and special education students. The second purpose was to compare CCC and DI flashcards across students employing a counter-balanced multiple-baseline design (Kazdin, 2010) to determine which procedure would be the most effective. Finally, we wanted to examine the effects of CCC with both general and special education elementary school students.

METHOD

Participants and Setting

The participants in this study were three, fourth grade girls who attended a large urban public Title 1 elementary school in the Pacific Northwest. Two of the participants met the criteria for specific learning disabilities and were served via Individualized Education Plan (IEP). One of these participants was given the *Woodcock-Johnson Achievement Test (WJ-III)* (Woodcock, McGrew, & Mather, 2008) and qualified in the areas of reading and written expression. The third participant was judged to be at-risk for school failure due to poverty and language delays. One participant, age 10, came from a family whose primary language was Spanish, another, age 9, whose family lived in poverty, and third student, age 10, who lived in a lower middle-class home. All three participants were well below grade level in spelling. The participants also needed assistance spelling their second grade core words, which the school district provided.

The study took place in the elementary resource room during the morning. There were no other students or teachers in the room when the first author worked with the participants. The room itself was spacious and allowed the kids to move freely. Tables with chairs were set around the room for the kids to complete their work. The participants, when present at school, would come from their fourth-grade general education classroom between 9:00 and 9:10 a.m. and stayed until 9:40 a.m. on Monday, Tuesday, Wednesday, and Friday mornings whenever the students attended school.

Materials

The participants were provided a notebook and pencil. At times the researcher would allow the use of a pen, but a majority of the tests were completed in pencil. Flashcards were made from 3 by 5 index cards. Our CCC sheets were developed by the first author (See Appendix A). Small stickers were also placed on CCC sheets as a reward for spelling a word correctly. The spelling words came from the school district lists categorized by grade. A sample grade word list can be seen in Appendix B.

Dependent Variable

The dependent measure was the number of correct words spelled. A correct word was defined such if it matched the letter sequence when compared to the word on the district core word list. These words were placed on kindergarten through sixth grade lists. Since the participants had mastered their

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

kindergarten and first grade core words, the second grade core words were employed in the study (See Appendix C). The words were first broken down into four sets of 28 words. Then each set was broken down into four word subsets consisting of seven words. The participants had to spell those words accurately throughout the course of the study.

Data Collection and Inter-observer Agreement

The first author created two sets of data sheets for this study (see Appendix D and Appendix E). One was used to determine the total number of correct spelling words out of 28 for a given set. The second measure was the number of correct words per subset of seven words. Each session consisted of the children writing their responses to the words dictated by the first author. If there were time during class, the first author would give a second test over these words. After the sessions, the first author counted the number of words that were spelled correctly as well as errors. On one data sheet the first author put the total number of words spelled correctly and incorrectly of the given set. Also on this sheet was a reliability column. When reliability was taken a "y" was recorded and when not done the space was left blank) and what experimental condition was in effect (indicated by B, I_1, I_2, I_3, or I_4). On the second data sheet the researcher recorded a "+" for each word spelled correctly and a "-" for each word spelled in error. The researcher then totaled up the number of words spelled correctly per subset and placed the number in the designated set number.

Interobserver agreement (IOA) was conducted for 60% of all the sessions. During these sessions two adults would independently re-grade the spelling tests. This meant one researcher graded number of words spelled correctly and then the second researchers stayed at their own table regraded a Xerox copy of the tests containing these same words. Agreement was scored if the item was scored in the same manner. Any difference in scoring was defined as a disagreement. The number of agreements divided by agreements plus disagreements and then multiplying that ratio by 100 to get the agreement percentage calculated agreement. The mean agreement score obtained was 100%.

Experimental Design and Conditions

A combination multiple baseline reversal design (Barlow, Nock, & Hersen, 2008; Kazdin, 2010) was employed to evaluate the effects of DI flashcards and CCC. Two of the participants followed the ACBACB format and the other participant followed the ABCABC format.

Baseline

Typical procedures were followed during this time. The researcher orally dictated the spelling words to each of the participants. No praise or attention to spelling was given during this time. After each session the first author thanked the students for writing their words. The word was said aloud, used in a sentence, and then repeated aloud again.

CCC

The researcher first created a CCC sheet for the participants. It consisted of a typical CCC sheet with the words to be practiced placed in the first column. In the next column the participant had to copy the word. In the next column, the participant had to cover the word and spell it from memory. However, the first author made some modifications to the sheet. Added to the sheet was a correction area for any words that were misspelled. These error words had to be rewritten correctly three times. Finally, a column for the students to checking their spelling and placing stickers to reward correct spelling was added. During these sessions, the participants viewed the word in the first column, copied the word in next column, then covered up first two columns to spell word from memory. Next, the students finally checked their spelling. If word was spelled correctly they placed a sticker next to the word. If the word was spelled incorrectly no sticker was placed by the word, and they were required to write correct spelling of this word three times.

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

DI flashcards

The first author constructed DI flashcards. The same words used on the CCC sheet were employed. Correct spelling of the word was placed on one side of the card and the other side left blank. During these sessions, the first author would orally prompt the student by saying, "Spell ____ (word)." Following the prompt, the participant had to orally spell the word within 5 to 10s seconds (to allow for spelling of larger words). If the word was spelled correctly, they were provided teacher praise such as "Good job" or "Great." Next, the card was placed at the back of the deck and the next word was presented. If the word was spelled incorrectly or no self-correction took place within the allotted time limit, the first author modeled the correct response by doing the following, "Listen, ___ (word) is spelled ____(letters read aloud)." The first author then asked participant, "What word is this? Spell ____ (word)." The card was then placed no more than three back. After three consecutive trials of the correct spelling of the word was the card finally placed in the back of the stack. The author went through the deck as many times as possible until the participant could spell the word correctly three consecutive times. This condition was in effect for differing numbers of sessions between and across students.

RESULTS

Participant 1

The number of total words spelled correctly across all sets during baseline and CCC were as follows. The mean for baseline was 9.67 words correct (range 8 to 11 words). For CCC the mean was 11.78 correct (range 12 to 14 words).

The number of total words spelled correctly during baseline and CCC can be seen in Figure 1 for Participant 1. For Set 1 the average number of words correct during baseline the mean was 1.0. During CCC the mean increased to 3.0 correct words (range 1 to 7 words). For Set 2 words, during baseline the mean number of words correct was 3.17 (range 2 to 4 words). For Set 3 words during baseline the mean was 1.75 corrects (range from 1 to 3 words). For Set 4, the number of correct words during baseline they ranged from 3 to 5 with an overall mean of 3.83 words.

Participant 2

The number of total words in all sets spelled correctly during baseline, CCC, and DI flashcards for Participant 2 in baseline was a mean of 13.0 words (range 12 to 14 words). For CCC for all sets, the mean was 21.27 correct (range 19 to 23 words). For DI flashcards, the mean was 24.33 correct words with a range of 22 to 26 words. For the return to baseline, the mean correct was 23.5 words (range 23 to 24 words). During the second CCC phase, scores improved slightly (M = 26.25; range 25 to 27 words). For the DI flashcard phase, the mean increased to 27.83 words (range 27 to 28 words).

The number of total words spelled correctly by set during baseline and each intervention of CCC and DI Flashcards is shown on Figure 2 for Participant 2. For Set 1 during baseline the mean was 2.67 corrects (range 2 to 4 words). For CCC the mean correct was 5.90 (range 4 to 7 words). On Set 2 during baseline, the mean number of words spelled correctly was 4.71 (range 3 to 5 words). During DI flashcards the mean increased to 6.33 (range 5 to 7 correct words). With a return to baseline, the mean number of words for Set 1 increased to 7.0 and for Set 2 the mean was 5.5 corrects (range 5 to 6 words). For baseline for Set 3 in baseline, the mean number of correct words was 4.42 (range 2 to 5 words). During second CCC condition, the mean increased to 6.75 corrects (range 6 to 7 correct words). For Set 4 during baseline the mean was 5.61 corrects (range 3 to 7 correct). For the DI Flashcard condition, the mean was 7.0 words spelled correct.

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

Participant 3

The number of total words in all sets spelled correctly during baseline, CCC, and DI Flashcards follows. The mean for baseline was 11.33 corrects (range 8 to 14 words). For DI flashcards the mean increased to 15.13 words (range 12 to 19 words). For CCC the mean again increased (M = 20.5; range 19 to 22 words). For the second baseline, the number of words spelled correctly again increased (M = 22.0 words; range 21 to 23 words). For DI flashcard phase, the mean again increased, (M = 25.4 words; range 24 to 28 words). For CCC again the mean increased, (M = 27.75; range 27 to 28 words).

For Participant 3, number of total set words spelled correctly during baseline and each intervention using either DI flashcards or CCC can be seen in Figure 3. For Set 1 the baseline an average of 2.0 correct words (range 1 to 3 words) was found. During DI flashcards were employed, the mean increased to 5.38 correct words (range 2 to 7 words). For Set 2 the baseline, the mean was 3.27 words (range 1 to 6 words correct). During CCC, the mean number of words spelled correctly increased (M = 6.25; range 5 to 7 words). The return to baseline for Set 1 produced a mean of 6.5 correct (range 6 to 7 words). On Set 2, the mean increased to 7.0 correct. For Set 3 during baseline the mean was 2.76 correct words (range 1 to 4 words). During DI Flashcards again the mean was 6.2 words correct (range 4 to 7 words). For Set 4 during baseline the mean was 4.21 corrects (range 3 to 6 words). During CCC again the mean increased to 6.75 correct words (range 6 to 7 words).

DISCUSSION

When comparing and evaluating the effects of a DI flashcard instruction and CCC on spelling accuracy we found, each to be highly effective. Utilization of the flashcard system generated marked improvement to 100% mastery across two sets of words for Participants 2 and 3. Utilization of the CCC system also generated such improvement across a differing two sets. For one participant, utilizing CCC generated improvement of one hundred percent mastery on one set of words. During the reversal, two of our participant's spelling declined. The first author noted that these participants quickly developed an understanding of the instructional methods. They noted an increased ability to read the words in reading passages and wanted to study the words each night. In addition, the first author learned that two of the participants had been studying their words at home and practicing with one another. We have documented this in some of our other research (Malone & McLaughlin, 1997).

The participants were very attentive to the first author and always worked hard to complete their spelling across all sessions. The participants were very eager to learn their spelling words since they felt spelling was a area that wanted to increase their skills. The CCC worksheets and DI flashcards appeared to improve their confidence in spelling. Implementing stickers for rewards for correctly spelling each word also helped the participants increase their confidence in spelling.

Use of the DI flashcard procedure was very practical. The flashcard system was efficient, requiring about five to ten minutes of one-on-one instructional time on a daily basis. It is important to note that the ease of the intervention did not detract from its effectiveness. It did require sufficient time for the first author to individualize materials for each participant. However, once individualized, the study was simply and efficiently implemented. The cost for the flashcards was minimal as well because flashcards could be found around the school or bought from a convenience store for only a few dollars and any marker or pen or pencil can be used to write the spelling words. The applicability of DI flashcards replicates our research in math (Brasch et al., 2008) with students in a special high school setting.

Employing CCC in the elementary school resource classroom was also practical. During CCC, data was taken each session with minimal disruption to the ongoing classroom routine. The financial costs were minimal as all the sheets used in the study were printed from a computer inside the classroom. The stickers were purchased from a local dollar store. The first author spent about 5 minutes making the spelling worksheets for the set of words to be worked on. Each session took approximately 10-15 minutes for each participant. As we have discussed elsewhere (McLaughlin & Skinner, 1996; Skinner

Copyright © 2012 SAVAP International

et al., 1997), the students completed their individual spelling worksheets independently. While spelling was not formally taught in the classroom, the participant's were expected to correctly spell their vocabulary terms. The implementation of CCC allotted them extra practice time that did not interfere with other classroom activities and assignments.

The present outcomes replicate our prior work with math facts (Becker, McLaughlin, Weber, & Gower, 2007; Brasch et al., 2007; Hayter et al., 2007). This increases confidence that employing a DI flashcard procedure can increase important and functional academic skills for students with a wide-range of disabilities (Jasny, Chin, Chong, & Vignieri, 2011). The present results add the growing literature regarding the effectiveness of CCC in spelling and its use in the schools (Carter et al., 2011; Kaufman et al., 2011; Hubbert et al., 2000; McLaughlin et al., 1991; Schermerhorn & McLaughlin, 1997).

In order for the participants to maintain and generalize the skills taught in the intervention (Stokes & Baer, 1977), each participant was taught how to independently to complete their CCC worksheets. Also, we required the students to read their spelling words aloud to themselves verbally to ensure that they are correctly pronouncing the word. The first author went through the correction process with each student, so that they could later self-correct each worksheet.

The use of a multiple baseline design (Barlow et al., 2008) allowed the first author to make data based decisions for each of the participants. These decisions enabled the first author to modify both the outcomes and the intervention over time. If a participant was not performing to standard or progressing as high as the author expected, the researcher examined the evidence and then made data-based decisions to change the project for the participant to help make her successful. In this case, ensuring consecutive days of mastery before moving onto next set of words help students over learn and the use of stickers as rewards for CCC helped the participants further increase their spelling.

There were some limitations in the present investigation. First, with all three participants, baseline was not as stable as expected. However, it was later learned that they were practicing spelling words at home using flashcards. We have found that participants often study at home when provided with individual testing methods (Malone & McLaughlin, 1997). Due to the daily scheduling constraints of the school, we were unable to gather data each day. One of the participants was absent more frequently than the other participants, which made data collection difficult. Participant 1 moved and we were unable to complete our comparisons for other sets. Another limitation in this study was the pre-assessment of the words the participants could spell. Future studies could pre-assess the words at least twice to make certain the words that the participants could spell were the same over two trials. The word lists were fixed throughout the study and the participants noted a couple times during the study that they were wondering when new words could be learned, so another study could evaluate the effects of CCC and DI Flashcards using flow lists (Schermerhorn & McLaughlin, 1997; McLaughlin et al., 1991). One of the participants moved during the course of the study, so only CCC was used for this participant. She did reach mastery on her first set of words, but there is no way to determine if intervention was truly effective or to see if she would master the remaining sets of words. Finally, it would have been a strong addition to the present report if we could have gathered data regarding changes in the participants' spelling in their other classes and subject-matter areas. The present research adds to the body of evidence that has suggested that CCC is an effective way to teach students to spell.

Copyright © 2012 SAVAP International

REFERENCES

Barlow, D. H., Nock, M., Hersen, M. (2008). *Single case research designs: Strategies for studying behavior change* (3rd ed.). New York: Allyn & Bacon.

Becker, W. C. (1977). Teaching reading and language to the disadvantaged: What we have learned from field research. *Harvard Education Review, 47*, 518-543.

Brasch, T. L., Williams, R. L., & McLaughlin, T. F. (2008). The effects of a direct instruction flashcard system on multiplication fact mastery by two high school students with ADHD and ODD. *Child & Family Behavior Therapy, 30*(1), 51-59.

Carnine, D., Silbert, J., Kameenui, E. J., & Tarver, S. G. (2004). *Direct instruction reading* (4th ed.). Upper Saddle River, NJ: Merrill/Pearson.

Carpenter, D. (1983). Spelling error profiles of able and disabled readers. *Journal of Learning Disabilities, 16,* 102-104.

Carpenter, D., & Miller, L. J. (1984). Spelling ability of reading disabled LD students and able students. *Learning Disability Quarterly, 5,* 65-70.

Cates, G. L., Dunne, M., Erkfritz, K. N., Kivisto, A., Lee, N., & Wierzbicki, J. (2007). Differential effects of two spelling procedures on acquisition, maintenance, and adaptation to reading. *Journal of Behavioral Education*, *16*, 71-82.

Conley, C., Derby, K. M., Roberts-Gwinn, M., Weber, K. P. & McLaughlin. T. F. (2004). An analysis of initial acquisition and maintenance of sight works following picture matching and copy, cover, and compare teaching methods. *Journal of Applied Behavior Analysis, 37*, 339-349.

Erbey, R., McLaughlin, T. F., Derby, K. M., & Everson, M. (2011). The effects of using flashcards with reading racetrack to teach letter sounds, sight words, and math facts to elementary students with learning disabilities. *International Electronic Journal of Elementary Education, 3*(3), 213-226. Retrieved from: http://www.iejee.com/index.html

Frith, U. (1980). *Cognitive processes in spelling.* New York: Academic Press.

Gerber, M. M. (1984). Orthographic problem solving of learning disabled and normally achieving students. *Learning Disability Quarterly, 7,* 151-164.

Gerber, M., & Hall, R. (1987). Information processing approaches to studying spelling deficiencies. *Journal of Learning Disabilities, 20,* 34-42.

Glover, P., McLaughlin, T. F., Derby, K. M., & Gower, J. (2010). Using a direct instruction flashcard system employing a back three contingency for errors with two students with learning disabilities. *Electronic Journal of Research in Educational Psychology, 8*, 457-482. Retrieved from http://www.investigacion-psicopedagogica.org/revista/new/english/anteriores.php

Graham, S. (1983). Effective spelling instruction. *Elementary School Journal, 83*, 560-567.

Graham, S. (1999). Handwriting and spelling instruction for students with leaning disabilities: A review. *Learning Disability Quarterly, 22*, 78-98.

Graham, S., Harris, K. R., & Fink-Chorzempa, B. (2002). Contributions of spelling instruction to the spelling, writing, and reading of poor spellers. *Journal of Educational Psychology, 94*, 669-686.

Copyright © 2012 SAVAP International

Hayter, S., Scott, E., McLaughlin, T. F., & Weber, K.P. (2007). The use of a modified direct instruction flashcard system with two high school students with developmental disabilities. *Journal of Developmental and Physical Disabilities, 19,* 409-415.

Heron, T. E., Heward, W. L., Cooke, N. L., & Hill, A. S. (1983). Evaluation of a class wide peer tutoring system: First graders teach each other sight words. *Education and Treatment of Children, 6.*, 137-152.

Hodges, R. E. (1982). Teaching spelling: A response to Hillerich. *Educational Leadership, 39*, 617, 631.

Hopewell, K., McLaughlin, T. F., & Derby, K. M. (in press). The effects of reading racetracks with direct instruction flashcards and a token system on sight word acquisition for two primary students with severe conduct disorders. *Electronic Journal of Research in Educational Psychology, 9*(2). . Retrieved from http://www.investigacion-psicopedagogica.org/revista/new/english/anteriores.php

Hubbert, E. R., Weber, K. P., McLaughlin, T. F. (2000). A comparison of copy, cover, and compare and a traditional spelling intervention for an adolescent with a conduct disorder. *Child & Family Behavior Therapy*, *22*(3), 55-68.

Jasny, B. R., Chin, G., Chong, L., & Vignieri, S. (2011). Again, and again, and again …. *Science, 334,* 1225.

Kaufman, L., McLaughlin, T. F., Derby, K. M., & Waco, T. (2011). Employing reading racetracks and DI flashcards with and without cover, copy, and compare and rewards to teach of sight words to three students with learning disabilities in reading. *Educational Research Quarterly*, *34,* 24-44

Kazdin, A. E., (2010). *Single case research designs: Methods for clinical and applied settings* (2nd ed.). New York: Oxford University Press.

Kearney, C. A., & Drabman, R. S. (1992). The write-say method of improving spelling accuracy in children with learning disabilities. *Journal of Learning Disabilities, 26*, 52-56.

Kinder, D., & Carnine, D. (1991). Direct instruction: What it is and what is it becoming. *Journal of Behavioral Education, 1*, 193-213.

Lennox, C., & Siegel, L.S. (1993). Visual and phonological spelling errors in subtypes of children with learning disabilities. *Applied Psycholinguistics*, *14*, 473-488.

Lerner, J., & Johns, B. (2011) *Learning disabilities and related mild disabilities: Characteristics, teaching strategies, and new directions* (11th ed.). Boston: Houghton Mifflin Co.

Maheady, L., & Sainato, D. M. (1985). The effects of peer tutoring upon the social status and social interaction patterns of high and low status elementary school students. *Education and Treatment of Children, 8,* 51- 65.

Malone, R., & McLaughlin, T. F. (1997). The effects of reciprocal peer tutoring with a group contingency on quiz performance in vocabulary with seventh and eighth grade students. *Behavioral Interventions, 12,* 27-40.

McLaughlin, T. F., Reiter, S. M., Mabee, W. S., & Byram, B. (1991). An analysis and replication of the add-a-word spelling program with mildly handicapped middle school students. *Journal of Behavioral Education, 1*, 413-426.

McLaughlin, T. F., & Skinner, C. H., (1996). Improving academic performance through self-management: Cover, copy, and compare. *Intervention in School and Clinic*, *32,* 113–119.

Copyright © 2012 SAVAP International

McLaughlin, T. F., Weber, K. P., & Barretto, A. (2007). Spelling: Academic interventions. In T. S. Watson & C. H. Skinner (Eds.), *Encyclopedia of school psychology* (pp. 317-320). New York, NY: Kluwer Academic/Plenum Publishers.

Mercer, C. D., & Mercer, A. R. (2005). *Teaching students with learning problems* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Murphy, J. E., Hern, C. L., Williams, R. L., & McLaughlin, T. F. (1990). The effects of the cover, copy, and compare approach in increasing spelling accuracy with learning disabled students. *Contemporary Educational Psychology, 15,* 379-386.

Nies, K. A., & Belfiore, P. J. (2006). Enhancing spelling performance in students with learning disabilities. *Journal of Behavioral Education*, *15*, 163-170.

Olenick, D. L., & Pear, J. J. (1980). Differential reinforcement of correct responses to probes and prompts in picture-name training with retarded children. *Journal of Applied Behavior Analysis, 13,* 77-89.

Ravitch, D. (2010). *The death and life of the great American school system: How testing and choice are undermining education.* New York: Basic Books.

Ruwe, K., McLaughlin, T. F., Derby, K. M., & Johnson, K. (2011). The multiple effects of direct instruction flashcards on sight word acquisition, passage reading, and errors for three middle school students with intellectual disabilities. *Journal of Developmental and Physical Disabilities, 23*, 241-255.

Schermerhorn, P., K., & McLaughlin, T. F. (1997). Effects of the add-a-word spelling program on test accuracy, grades, and retention of spelling words with fifth and sixth grade regular education students. *Child & Family Behavior Therapy, 19*(1), 23-35.

Skinner, C. H., Belfiore, P. J., & Pierce, N. L. (1992). Cover, copy, and compare: Increasing geography accuracy in students with behavior disorders. *School Psychology Review*, *21,* 73-81.

Skinner, C. H., McLaughlin, T. F., & Logan, P. (1997). Cover, copy, and compare: A self-managed academic intervention across skills, students, and settings. *Journal of Behavioral Education, 7,* 295-306.

Skinner, C. H., Ford, J. M., & Yunker, B. D. (1991). A comparison of instructional response requirements on the multiplication performance of behaviorally disordered students. *Behavioral Disorders, 17*, 56-65.

Smith, T. J., Dittmer, K. I., & Skinner, C. H. (2002). Enhancing science performance in students with learning disabilities using copy, cover, and compare: A student shows the way. *Psychology in the Schools, 39*, 417-426.

Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis*, *10*, 349-367.

Swanson, H. L. (1999). *Interventions for students with learning disabilities: A meta analysis of treatment outcomes*. New York: Guilford.

Tan, A. & Nicholson, T. (1997). Flashcards revisited: Training poor readers to read words faster improves their comprehension of text. *Journal of Educational Psychology, 89*, 276 – 288.
Tanner, D. (2001). The learning disabled: A distinct population of students. *Education, 121*, 795-798.

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

Van Houten, R., & Rolider, A. (1989). An analysis of several variables influencing the efficacy of flash card instruction. *Journal of Applied Behavior Analysis, 22,* 111-120.

Woodcock, R. W., McGrew, W. S., & Mather, N. (2008) *Woodcock Johnson Tests of Achievement (WJ III).* Rolling Meadows, IL: Riverside Publishing Company.

Worthy, M. J., & Intermezzi, J. (1990). Spelling errors of normal and disabled students on the achievement levels one through four: Instructional implications. *Annals of Dyslexia, 40*, 138-151.

Young, C., Hecimovic, A., & Salzberg, C. (1983). Tutor–tutee behavior of disadvantaged kindergarten children during peer teaching. *Education & Treatment of Children*, *6*, 123-135.

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

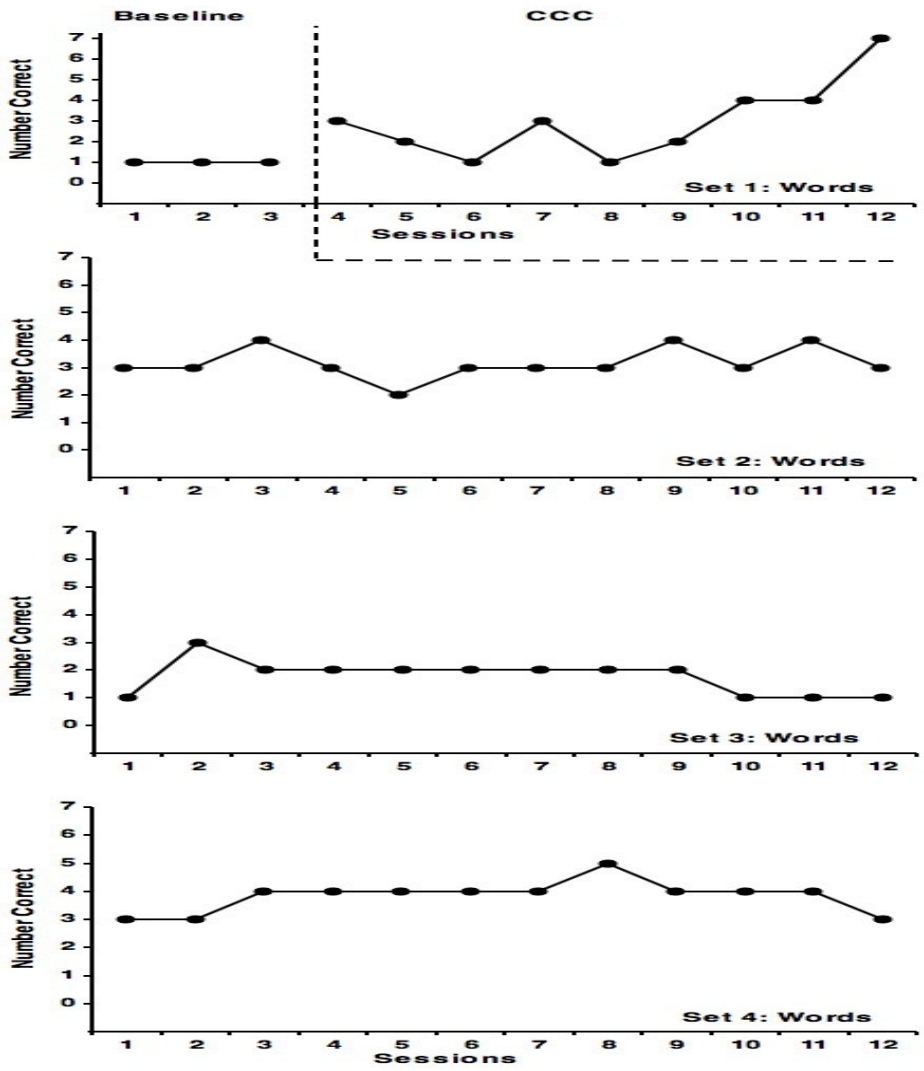

Figure 1. Number of total of correct words by set in baseline and CCC for Participant 1

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

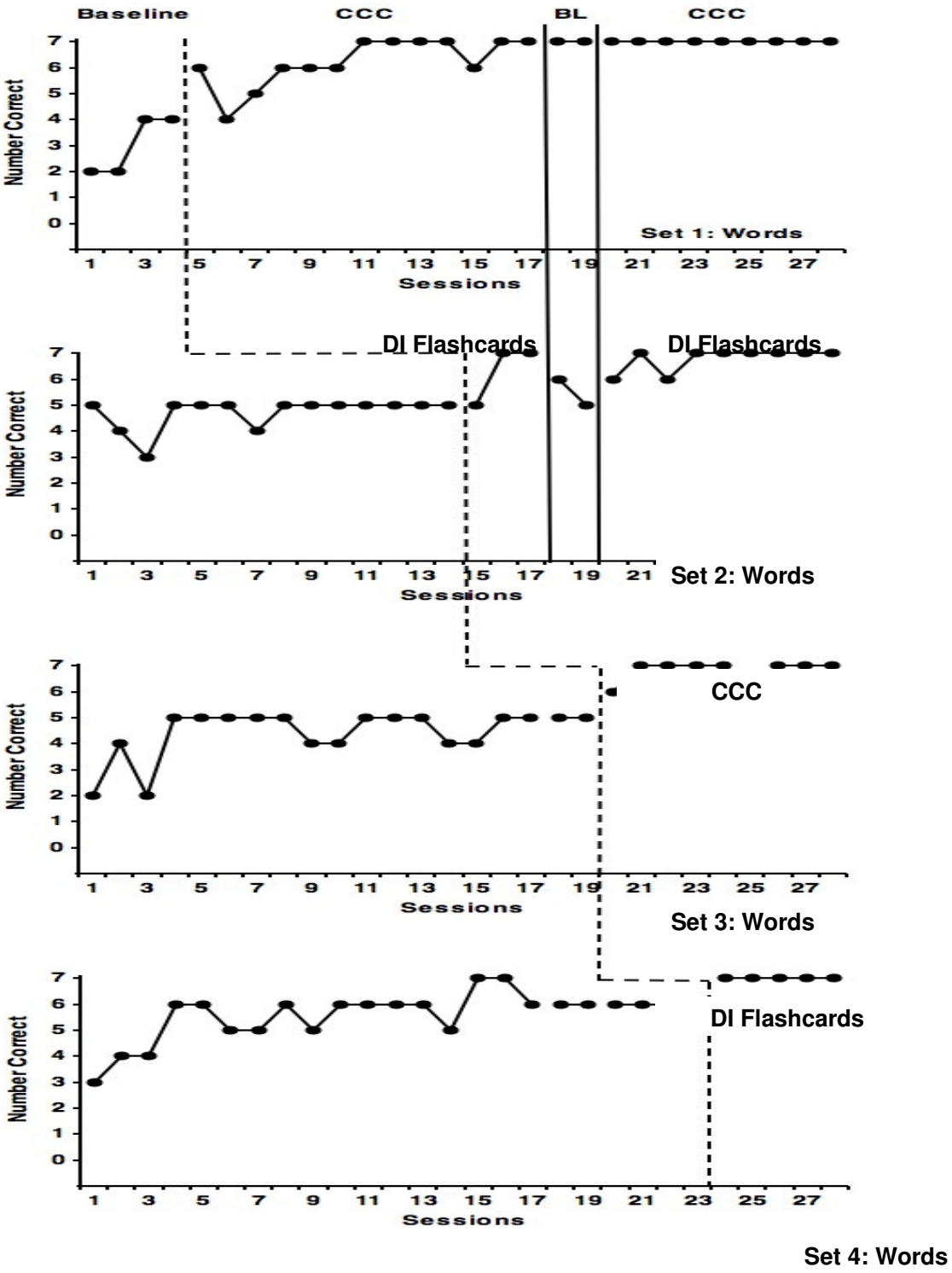

Figure 2. Number of total correct words by set for each experimental condition for Participant

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

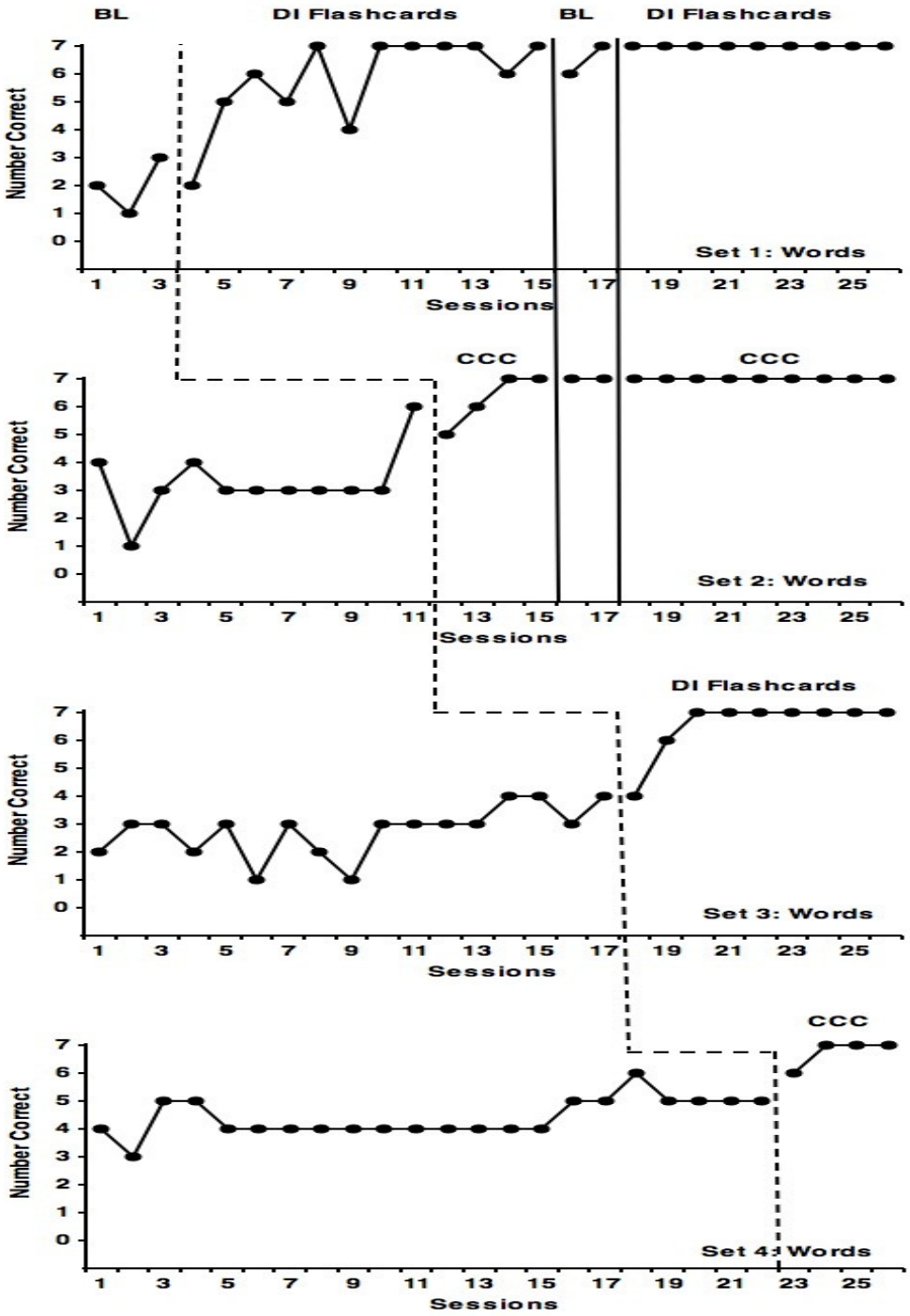

Figure 3. Number of total correct words spelled by set for each experimental condition for Participant 3

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

Appendix A

Name___

Words	*Copy*	*Cover Copy*	*Check Spelling?*	*Correction (3 times)*	

Appendix B

Example of High Frequency Words Used in Spokane Public Schools

Kindergarten	*First Grade*	*Second Grade*
a	all	about
and	are	because
cat	as	different
dad	at	get
dog	be	great
I	but	many
love	by	number
me	for	over
mom	from	people
no	had	same
the	have	through
to	her	write

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

Appendix C

Second Grade High Frequency Core Words

about	after	again	also
an	another	any	around
away	back	because	been
called	came	can	come
could	day	did	different
do	does	each	even
find	first	get	go
good	great	has	help
here	him	how	if
into	its	just	know
like	little	long	look
made	make	man	many
may	me	men	more
most	much	must	my
new	no	now	number
off	old	only	other
our	out	over	own
part	people	place	put
right	said	same	say
see	small	so	some
such	take	tell	than
their	them	then	there
these	think	three	through
time	too	two	up
use	very	water	way
well	went	where	which
who	why	will	words
work	would	write	your

Appendix D

Name____

Date	*# Correct*	*# Incorrect*	*Reliability*	*Condition*

Copyright © 2012 SAVAP International

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 2, No. 2, March 2012

Appendix E

Date								
Set 1								
about								
could								
here								
may								
our								
such								
use								
Set 2								
an								
do								
into								
most								
part								
their								
well								
Set 3								
away								
find								
like								
new								
right								
these								
who								
Set 4								
called								
good								
made								
off								
see								
time								
work								

Copyright © 2012 SAVAP International