

IMPROVING THE WRITING SKILLS OF HIGH SCHOOL STUDENTS WITH LEARNING DISABILITIES USING THE EXPRESSIVE WRITING PROGRAM**Barbara D. Walker***Marietta City Schools,***Margaret E. Shippen***Auburn University,***David E. Houchins***Georgia State University,*

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This study investigated the effects of the Direct Instruction writing program, *Expressive Writing* (Engelmann & Silbert, 1983), for high school students with learning disabilities (LD). The study used a multiple probe design across participants and results indicate the effectiveness of *Expressive Writing* in improving the writing skills of high students with LD who participated. The study (a) examined the number of correct word sequences written during the first three minutes of narrative writing opportunities, (b) analyzed the incorrect word sequences by error type (e.g., spelling, use of Standard English, punctuation, capitalization), and (c) examined the generalization effects of *Expressive Writing* on performance on a standardized measure of writing skills. This study has implications for the practical use of the *Expressive Writing* program to improve overall written expression as well as pre-skills such as spelling, mechanics, and Standard English usage.

The term Learning Disability (LD) has been synonymous with “unexpected underachievement,” occurring when a student is not achieving up to potential, even though he or she has been given adequate opportunities to learn (Lyon et al., 2001). Samuel Kirk coined the term “learning disabled” in 1962, at a time when students who were not performing up to expectations in one or more subject areas were attaining formal recognition in the education community. Since its inception, number of school-aged children identified as having LD continues to grow. Despite the number of students identified as having a learning disability, the etiology of LD continues to be a topic of discussion and debate in the field of special education (Wong et al., 1998). According to Swanson, Hoskyn, and Lee (1999), one conceptual model explaining LD receiving consensus in the field is the information processing theory. In this theory, students with LD are of average intelligence, but experience deficiencies in information-processing abilities.

Vaughn, Gersten, and Chard (2000) stated that students with LD typically lack a strategic plan for learning. The language used in learning and metacognitive skills naturally occurring in peers without LD are oftentimes not as developed in learners with LD. Swanson et al. (1999) illustrate the common difficulties these students. A breakdown occurs either during the sensory registry phase, in which stimulus is brought in through the senses; the short term memory, in which information is retained for a brief time; or the long term memory, in which information is filed (into schema according to meaning) and retrieved.

Instructional methods that take into account the relationship between learning theory and instruction (Schunk, 2000) and are based on research-based practices (Carnine 1995, 1997) provide practitioners with tools to effectively teach students with LD. One such method of instruction is Direct Instruction (Adams & Englemann, 1996; Darch & Simpson, 1990; Darch, Carnine, & Gersten, 1984; Hastings, Raymon, & McLaughlin, 1988; Lum & Morton, 1984; Rivera & Smith, 1988). Direct Instruction (DI) is characterized by fast-paced, well-sequenced, highly focused lessons (Swanson et al., 1999). Students are usually instructed in small groups and given several opportunities to respond in unison and individually, with immediate feedback using specific correction procedures. Teachers using

DI *model* (provide the correct response), *lead* (have student say the correct answer with the teacher, and *test* (give immediate and delayed probe on the task initially attempted). Skills are taught until students exhibit mastery and skill are subsequently systematically reviewed and practiced (Adams & Englemann).

Empirical support for DI and students with LD across subject areas is substantial (Adams & Englemann, 1996; Darch & Simpson, 1990; Darch, Carnine, & Gersten, 1984; Hastings, Raymon, & McLaughlin, 1988; Lum & Morton, 1984; Rivera & Smith, 1988). The effectiveness of DI in teaching reading skills was established in a number of additional studies (Adams & Englemann; Grossen, 1999). In a meta-analysis of reading, Adams and Englemann found studies involving DI reading programs yielded a .69 effect size, which is well above educational significance. This methodology has been shown to be effective in mathematics instruction (Adams & Englemann; Crawford & Snider, 2000). However, very little research has been published on DI and the development of writing skills

DI Writing Programs

Two writing programs that employ DI tenets are *Expressive Writing* (Engelmann & Silbert, 1983) and *Reasoning and Writing* (Engelmann & Silbert, 1991). *Expressive Writing* is designed as an intervention program that presents the stages of the writing process, including sentence and paragraph writing, drafting, revising, and editing for clarity. Writing skills are presented through a carefully designed spiraling sequence. That is, they are introduced and built upon incrementally in a sequential manner. Through a component skill to composite skill approach, participants master preskills before applying them to unpracticed tasks. The activities are designed to provide an introductory approach with many opportunities for practice and review over time. The use of carefully sequenced skill presentation, practice and review, and immediate corrective feedback when mistakes occur supports the development of writing skills for learners with disabilities (Collins & Carnine, 1988).

Though the rule-based strategies of mechanics in writing are not the primary focus of written language instruction, participants benefit by developing these skills as the writing process is learned (Houck and Billingsley, 1989). In *Expressive Writing*, the process and mechanics of writing are presented through highly structured teacher-directed instruction. The vocabulary and examples presented in the teacher script has been field tested. Walker, Shippen, Alberto, Houchins, and Cihak (2005, 2006) conducted a study investigating the effects of *Expressive Writing* for high school students with learning disabilities. Results indicated that the *Expressive Writing* program improved the writing skills of the students in this study. Students were able to generalize and maintain the skills learned during intervention.

Reasoning and Writing (Engelmann & Silbert, 1991) is another DI writing program that is developmental in design and may be used as a grade-appropriate curriculum for students with and without disabilities. Two studies using *Reasoning and Writing* targeted participants with mild disabilities (Keel & Anderson, 2002; Roberts, 1997) and participants who were gifted (Ginn, Keel, & Fredrick, 2002) receiving services in resource settings. These studies indicated significant gains in writing as measured by standardized tests of written language.

Cross, Rebarber, and Wilson (2002) conducted a study involving the use of both DI writing programs (*Expressive Writing* and *Reasoning and Writing*) along with DI materials in other subject areas. The project involved standardized reading and language scores for 5,874 participants from nine states and the District of Columbia. Though no measures of writing were reported, gains were noted in the areas of language, listening, and reading.

The purpose of this study was to investigate the effectiveness of using *Expressive Writing* (Engelmann & Silbert, 1983) in the acquisition and maintenance of writing skills of high school students with LD. The study replicated and extended the Walker et al., (2005) study by using error analysis to examine subskills in the written expression process for students with LD. The Walker et al. study only considered the broader skill of correct word sequences. The current study examined the root of incorrect word sequences. Specifically, the study (a) examined the number of CWS written during the first three minutes of narrative writing opportunities, (b) analyzed the incorrect word sequences by error type (e.g., spelling, use of Standard English, punctuation, capitalization), and (c) examined the generalization effects of *Expressive Writing* on performance on a standardized measure of writing skills.

Method

Participants

The participants in this study were three high school students with LD. Each participant was identified as having an LD in the area of written expression in accordance with state regulations. The state in which this study took place defines LD as a 20-point discrepancy between cognitive ability and achievement, commensurate with intelligence in the average ranges. The students' Individualized Education Plans included documentation of a significant weakness in written expression and

specified goals and objectives that address written expression skills. Each participant was receiving services in a special education setting for at least one 90-minute period per day.

Their ages ranged from 15 years, 3 months to 15 years, 9 months at the beginning of the study. Each participant was in the 9th grade. Participants had intelligence quotients ranging from 92 to 102. As suggested by Rosenberg and colleagues (1994), demographic information is provided in Table 1.

<Insert Table 1 About Here>

Setting

The study was conducted in a public high school special education classroom in large metropolitan city in the southeastern United States. The classroom where the study took place was physically similar to other classrooms in the school in size and arrangement. The school was comprised of 1836 students of which 9% are in Special Education programs. Thirty-three percent of the students in the school receive free or reduced lunches. Forty-six percent of the students were African American. Thirty-nine percent were Caucasian. Twelve percent were Hispanic. Two percent were Asian American.

Materials

Materials included *Expressive Writing I* (Engelmann & Silbert, 1983) participant and teacher materials. *Expressive Writing I* focuses on the writing and the editing of basic sentences, paragraphs, and stories. Instructional strands within the program include (a) mechanics, (b) sentence writing, (c) paragraph and story writing, and (d) editing. A lesson takes approximately 45 minutes with the 30 minutes of time being group instruction with and the remainder being individual time.

Research Design

This study used a multiple probe design across participants. The multiple probe design is a variation of the multiple baseline design, in that participants are probed intermittently rather than continuously during the baseline phase (Horner & Baer, 1978). The design is a single subject method that allows for demonstration and replication of a functional relationship between the dependent and independent variables (Barlow & Hersen, 1984). Maintenance probes were taken for each participant two, four and six weeks after the completion of all 50 lessons of *Expressive Writing I*.

Independent Variable and Dependent Variable

The independent variable was writing instruction through Level 1 of *Expressive Writing* (Engelmann & Silbert, 1983). Three dependent variables were used for this study. The first dependent variable was writing fluency on narrative writing assignments as assessed by the number of correct word sequences (CWS) (Crawford, 2001) written in a three minute period. A CWS was defined as: (a) two adjacent, correctly spelled, capitalized, and punctuated words, (b) capitalized and correctly spelled beginning of sentences, (c) correctly spelled and punctuated ending of sentences, and (d) acceptable in standard English usage. For example, in the sentence "*Sally run fast.*," there are four possible CWS. One would be counted for the first word of the sentence being capitalized and spelled correctly. The sequences of *Sally run* and *run fast* would not be counted as CWS because *run* is not the correct verb tense. The sequence *fast.* would be counted a CWS as a properly punctuated end of a sentence. Table 2 illustrates how this sentence would be scored for CWS.

<Insert Table 2 About Here>

The second dependent variable was an error analysis to assess the type of mistakes made by the participants on CWS to further evaluate the effect of the *Expressive Writing* program. Specific error analysis was conducted on use of Standard English, punctuation, capitalization, and spelling incorrect word sequences.

The third dependent variable was posttest scores on the spontaneous writing scales of the *Test of Written Language, 3rd Edition* (TOWL-3; Hammill & Larsen, 1996). This subtest aligns with the skills that are taught in *Expressive Writing I*. Many of the skills measured in the contrived scales of the TOWL are not presented in the program, therefore, only the spontaneous writing scales were examined in this study.

Forms A and B were administered and counterbalanced as pre and posttests. The TOWL-3 is a standardized test of writing skills that includes spontaneous writing scales which provide a holistic measure of writing skills in context. The spontaneous scales are rating scales applied to a sample of the participant's writing. The TOWL-3 yields quotient scores with a mean of 100 and a standard deviation of 15. The Quotient Scores are described as follows: very superior (131-165), superior (121-130), above average (111-120), average (90-100), below average (80-89), poor (70-79), and very poor (35-69). Gains in narrative writing skills and generalization to a standardized measure were assessed through pre and post test administration of the spontaneous writing components of the TOWL-3.

Procedures

Placement and Pre Testing. The first author administered the placement test for the *Expressive Writing* and the TOWL-3 prior to implementation of the intervention to assess pre-intervention writing skills. The forms of the TOWL-3 were counterbalanced, so that none of the participants received the same form of the test during pre- and posttesting.

Baseline Procedures. During baseline, participants were given topic sentences and instructed to write passages about the topic. The writing completed by the participants during the first three minutes of writing time was scored using the CWS method (Crawford, 2001). Participants did not receive feedback on writing samples during baseline. The first participant began instruction in *Expressive Writing I* when he achieved a stable baseline varying no more than 20% above or below the baseline mean (Wolery & Dunlap, 2001).

Intervention Phase. The participants were members of three different small instructional groups. Instruction took place in the morning instructional block during which these students were enrolled in a studies skills class. Each participant was instructed using *Expressive Writing* in a separate classroom. Data were collected for the study from the targeted participant in each of the three groups. Participants were instructed to write paragraphs with a topic sentence, supporting details, and a conclusion. The paragraph-writing component of the lesson was scored for CWS and served as the probe measure for the study. Each lesson took approximately 50 minutes. Lessons missed due to absences or school day scheduling conflicts were made-up during another part of that day or the following school day.

The primary researcher presented lessons following the script and procedures in the program's teacher presentation book. She has 10 years of experience teaching special education and had taught *Expressive Writing* 6 times prior to this study. Moreover, the researcher was formally trained to implement DI programs and has trained other teachers in the use of the programs.

The first participant (Eric) achieved an increase indicating 30% in CWS above baseline mean for three consecutive trials prior to implementation of the treatment with the second participant (Deborah). The study continued with the same criteria for each participant to begin treatment, until all three are participants were receiving instruction in *Expressive Writing I*.

Post Testing. Participants were given the TOWL-3 upon completion of all lessons of the program. The TOWL-3 was administered individually.

Maintenance Procedures. Maintenance probes were conducted to determine if the participants continue to perform the writing behaviors at a consistent rate. Participants were given topic sentences and instructed to write passages about the topic. The first measure was taken two weeks after the conclusion of the intervention for each participant. The second and third measures were taken four and six weeks, respectively, after the conclusion of the intervention for each participant.

Scoring Procedures. The first author and a graduate student calculated CWS on the probes and the TOWL-3 independently. The graduate student was trained to score CWS. Prior to being scored, writing samples were coded by a second independent graduate student. Writing samples were coded with each opportunity for a CWS sequence numbered. CWS were calculated according to the following guidelines specified by Crawford (2001): (a) two adjacent, correctly spelled, capitalized, and punctuated words (b) capitalized and correctly spelled beginning of sentences, (c) correctly spelled and punctuated ending of sentences, and (d) acceptable in standard English usage. For each opportunity for an occurrence of a CWS, either a + (occurrence) or - (nonoccurrence) was marked. The number of occurrences of CWS for each probe was recorded.

Error Analysis. The researcher conducted an error analysis to assess the type of mistakes made by the participants on CWS to further evaluate the effect the targeted writing subskills of Standard English usage, punctuation, capitalization and spelling had on the dependent variable of number of CWS written.

Treatment Fidelity. An independent graduate student who was formally trained in DI methodology conducted treatment fidelity measures. She observed 20% of the sessions and measured treatment fidelity of the DI groups using a modified version of the Teacher Monitoring Program (Bird & Fitzgerald, 1992) with measures for signaling, number of responses reinforced, and appropriate implementation of correction procedures.

Interobserver Agreement. The trained graduate student also served as the second observer for calculating interobserver reliability. The first author and the graduate student independently scored writing samples for CWS, marking a plus (+) for correct occurrences and a minus (-) in instances in which the participant failed to produce a CWS (Richards et al., 1999). The recordings of the observers were compared to determine the percent of agreement between the two.

Social Validity. A subjective measurement of social validity (Wolf, 1978) was administered at the conclusion of the intervention phase. Participants completed a survey that assessed whether (a) participants felt their writing skills improved during the intervention period, (b) they believed their

gains will be maintained, (c) they enjoyed the instructional writing program, and (d) they would recommend Expressive Writing for other high school students next year.

Data Analysis and Results

Event recording was used during data collection to determine the number of CWS (Crawford, 2001) produced in the first three minutes of writing sessions. Data were presented graphically for visual analysis. The percent of overlap of data were calculated across all phases.

A visual analysis was conducted on the multiple probe design that replicates the treatment across different participants. This analysis indicated a functional relationship of instruction through *Expressive Writing I* on the writing performance of participants. Quotient scores of the spontaneous writing scales of the TOWL-3 were analyzed to determine if skills taught in *Expressive Writing I* generalized to this standardized measure of writing skills.

Placement and Pretesting.

Prior to implementation of the intervention to assess pre-intervention writing skills the investigator administered the placement test for the *Expressive Writing*. All participants' placement scores for *Expressive Writing* indicated placement in Level 1 of the program.

Participants were also given the TOWL-3. The TOWL-3 yields quotient scores with a mean of 100 and a standard deviation of 15. The Quotient Scores are described as follows: very superior (131-165), superior (121-130), above average (111-120), average (90-100), below average (80-89), poor (70-79), and very poor (35-69). The students' pretest scores on the TOWL-3 were as follows: Eric 77, Deborah 76, and Keirra 71. All participants' quotient scores fell in the "poor" range of performance.

Baseline Procedures

During baseline, participants were given prompts similar to those in *Expressive Writing* and instructed to write passages about the topic. The writing completed by the participants during the first three minutes of writing time was scored using the CWS method (Crawford, 2001). Prompts were used to measure baseline writing performance. Baseline means of CWS written during three-minute timed sessions were as follows: Eric 25, Deborah 27, and Keirra 18. Eric, the first participant, received instruction in *Expressive Writing I* when he achieved a stable baseline varying no more than 20% above or below the baseline mean (Wolery & Dunlap, 2001).

Curriculum-Based Measures Scores

Participants wrote paragraphs with a topic sentence, supporting details, and a conclusion. The paragraph writing component of the lesson was scored for CWS and served as the probe measures for the study. During intervention, the first participant (Eric) achieved an increase indicating 30% in CWS above his baseline mean of 25 for three consecutive trials prior to implementation of the treatment with the second participant (Deborah). After entering the intervention phase, Deborah increased her probes scores to indicate a 30% increase from her baseline mean of 27. Keirra then began receiving instruction. Each participant's group completed all 50 lessons in *Expressive Writing I*. Intervention phase means were as follows: Eric 39, Deborah 39, and Keirra 23. Table 3 provides CWS means across phases.

Error analysis was conducted to assess the type of mistakes made by the participants on incorrect word sequences. This analysis was conducted to further evaluate the effect the targeted writing subskills of Standard English usage, punctuation, capitalization and spelling had on the dependent variable of number of CWS written. See Table 4 for percentages of each type of error made by participants.

TOWL Scores

Participants were given the TOWL-3 upon completion of all lessons of the program. Posttest quotient scores were as follows: Eric 81, Deborah 80, and Keirra 75. Table 5 provides an overview of pre and posttest scores on the TOWL-3.

Treatment Fidelity

An independent graduate student who is formally trained in DI methodology conducted treatment fidelity measures. She observed 20% of the sessions and measured treatment fidelity of the DI groups using a modified version of the Teacher Monitoring Program (Bird & Fitzgerald, 1992) with measures for signaling, number of responses reinforced, and appropriate implementation of correction procedures. The desired percentages of 90% student response to teacher signaling, teacher praise of 25% of correct responses, and proper correction procedures followed for 90% of mistakes made were exceeded with 97% student response to teacher signaling, teacher praise of 40% of correct responses, and proper correction procedures followed for 93% of mistakes being observed by the independent graduate student.

Interobserver Reliability

The primary researcher and a graduate student calculated CWS independently. The graduate student was trained to score CWS. For each opportunity for an occurrence of a CWS, either a + (occurrence) or – (nonoccurrence) was marked. The number of occurrences of CWS for each probe was recorded. The recordings of the two observers were compared. A 100% agreement was found in the scoring of Correct Word Sequences.

Maintenance Procedures

Maintenance probes were conducted to determine if the participants continue to perform the CWS writing behaviors at a consistent rate. Participants were given topic sentences and instructed to write passages about the topic two, four, and six weeks after the end of the intervention phase. Maintenance probe scores were as follows: Eric, 42, 43, 42; Deborah, 42, 40, 41; Keirra 26, 26, 26.

Data Analysis

Event recording was used during data collection to determine the number of CWS (Crawford, 2001) produced in the first three minutes of writing sessions. Data was graphically presented for visual analysis (see Figure 1). Percent of overlap of data was calculated across all phases. No overlap was found for any of the participants between baseline and intervention phases. Rapid change in data was noted between baseline and intervention phases.

<Insert Figure 1 About Here>

A visual analysis was conducted on the multiple probe design that replicates the treatment across participants. This analysis indicated a functional relationship of instruction through *Expressive Writing I* on the writing performance of participants. Each student's number of CWS increased in a nonvariable upward pattern.

The researchers conducted an error analysis to assess the type of mistakes made by the participants on CWS to further evaluate the effect the targeted writing subskills of Standard English usage, punctuation, capitalization and spelling had on the dependent variable of number of CWS written (see Table 3 for percentages of each type of error made by participants). Errors in Standard English usage accounted for 18, 17, and 20 percent of the total errors made by Eric, Deborah, and Keirra, respectively. The percent of errors due to mistakes in punctuation were 40, 43, and 11, respectively for the three participants. Errors in capitalization accounted for 22, 13, and 9 percent of the total errors made by the three participants, respectively. Spelling errors accounted for 20, 27, and 60 percent of the total errors made by Eric, Deborah, and Keirra, respectively, on the paragraph writing portion of the lessons from *Expressive Writing I* during the intervention phase.

<Insert Table 3 and 4 About Here>

Overall gains in narrative writing skills and generalization to a standardized measure were assessed through pre and post test administration of the spontaneous writing components of the TOWL-3. Each participant's scores on this measure indicated an improvement in writing skills, as well. Eric's quotient Score improved from a 77 pretest score to an 81 posttest score. Deborah's quotient Score improved from a 76 pretest score to an 80 posttest score. Keirra's quotient Score improved from a 71 pretest score to a 75 posttest score. Each participant increased his or her quotient score by four points, nearly one third of a standard deviation on the TOWL-3. See Table 5 for gain scores on the TOWL-3.

<Insert Table 5 About Here>

Social Validity Measure

Students completed a questionnaire as a measure of social validity of the intervention. All students indicated after completing *Expressive Writing I*, they (a) are better writers, (b) enjoyed the program, (c) would recommend *Expressive Writing* for other high school students next year, and (d) will remember what they learned about writing in the program next year.

Discussion

This study addressed the effect of *Expressive Writing I* (Engelmann & Silbert, 1983) on the writing skills of high school students with LD. Results support existing literature regarding the effectiveness of DI to teach writing skills to students (Cross et al., 2002; Keel & Anderson, 2002; Roberts, 1997; Walker et al., 2005, 2006). All three high school students who participated in the study showed academic gains with instruction through the DI writing program. These results have implications for classroom instructional practices and contribute to the existing literature in the area of teaching writing skills to students with LD.

Discussion of Individual Participant Results

The first participant in the study was a 15 year old African-American male with LD in the areas of written expression and reading. Eric was eager to engage in the *Expressive Writing I* lessons and seemed to enjoy participating in the study. Though the text he produced during the paragraph writing portion of the lessons were composed of primarily simple sentences, Eric displayed a relative strength in his ability to spell well. He also maintained his writing performance at higher level than during the intervention phase. The generalization of his writing performance was evident in the increase in his posttest scores on the TOWL-3.

Deborah, the second participant, was a Caucasian female with LD in the area of written expression only. Like Eric, Deborah was eager to please the instructor during the study and was engaged and on-task during instruction through *Expressive Writing I*. She also wrote simple sentences and exhibited a relative strength in her spelling ability on those passages. She also maintained her writing performance at higher level than during the intervention phase. The generalization of her writing performance was evident in the increase in her posttest scores on the TOWL-3.

Both Eric and Deborah exhibited notable growth in a relatively short period of instructional time. Each of these students showed marked improvement in the number of CWS written during timed writings (see Figure 1). Growth on the standardized measure of writing skills, the TOWL-3 was notable, as well. Eric and Deborah improved from the "poor" (70-79) range to the "below average" (80-89) of quotient scores on the TOWL-3. While the effectiveness of the Direct Instruction writing is apparent in the gains in writing skills made by these students, both students are still behind.

Keirra, the third participant, was a 15 year old African-American female served in Special Education in the areas of written expression and reading. During the course of the study the researcher became aware that Keirra was pregnant. The pregnancy did not affect Keirra's attendance. Keirra's behavior did detract from instruction in that she engaged in many attention-seeking behaviors and required much redirection to remain on-task. Keirra exhibited a weakness in the area of spelling. Her writing passages included many spelling mistakes. In fact, an error analysis revealed that 60% of the missed opportunities for scoring of a CWS in Keirra's writing resulted from spelling errors. However, Keirra did maintain her writing performance at higher level than during the intervention phase. Her gains in writing performance generalized to a standardized measure of writing, as she increased her quotient score on the TOWL-3 by four points.

Error Analysis

The researcher conducted an error analysis to assess the type of mistakes made by the participants on CWS to further evaluate the effect the targeted writing subskills of Standard English usage, punctuation, capitalization and spelling had on the dependent variable of number of CWS written. Errors in Standard English usage accounted for 18, 17, and 20 percent of the total errors made by Eric, Deborah, and Keirra, respectively. The percent of errors due to mistakes in punctuation were 40, 43, and 11, respectively for the three participants. Errors in capitalization accounted for 22, 13, and 9 percent of the total errors made by the three participants, respectively. No trends were found during the analysis of Standard English usage, punctuation and capitalization errors. Spelling errors accounted for 20, 27, and 60 percent of the total errors made by Eric, Deborah, and Keirra, respectively, on the paragraph writing portion of the lessons from *Expressive Writing I* during the intervention phase.

Given the sensitivity of this measure to spelling errors, it is not surprising that a poor speller produced less CWS than a more proficient speller. The participant with the poorest spelling skills, Keirra, made very little growth on CWS produced in a timed writing sessions. Her baseline mean of 18 improved only to 23, compared to a 15 and 12 point increase in participants one and two, respectively. The implication is that spelling errors clearly impacted CWS written by Keirra.

The results from the generalization measure, pre and post test scores on the TOWL-3, were as follows: Eric's quotient score improved from a 77 pretest score to an 81 posttest score. Deborah's quotient score improved from a 76 pretest score to an 80 posttest score. Keirra's quotient score improved from a 71 pretest score to a 75 posttest score. Each of the students improved his or her quotient scores by 4 points, which is nearly one third of a standard deviation on the test. Though spelling performance affects scores on the TOWL, spelling is one of many factors measured and accounted for only a small portion of a student's score on this standardized test. Keirra's growth in writing skills as measured by the TOWL was commensurate with the other two participants in spite of her apparent spelling deficits.

Given the discrepancy in the growth made by students' writing skills when instructed using *Expressive Writing*, more research is needed. *Expressive Writing* does not address spelling skills explicitly. The intervention may result in limited growth for a poor speller. An appropriate area of future research would include simultaneous application of a research-based spelling program and *Expressive Writing* for learners exhibiting poor spelling ability. The complex nature of writing, with many component skills required to produce a composite produce, lends itself to more in depth studies

(Graham, 1997; Scardamalia & Bereiter, 1986). Further research investigating the interaction of requisite skills for writing is needed.

Maintenance Measures

All three participants maintained gains made during the intervention phase on probes taken at two, four and six weeks after completion of the *Expressive Writing I* program. Notably, the maintenance scores were actually higher than intervention phase means for all participants. Each participant appeared to maintain scores indicative of the end of the intervention phase with no formal practice or review of skill taught in *Expressive Writing I*. Eric improved from an intervention phase mean of 39 to maintenance scores of 42, 43, and 42; Deborah's intervention phase mean of 39 improved to maintenance scores of 42, 40, and 41; Keirra scored an intervention phase mean of 23 and maintenance scores of 26, 26, and 26 (see Table 5 for results).

Contribution to the Literature

This study contributes to the existing literature on teaching students with learning disabilities writing skills in three important ways. First, it confirms and extends research involving teaching writing using DI methodology, specifically the *Expressive Writing* program. Next, it supports the use of single subject research design into this line of research. A third contribution of this study is the furthering of the establishment of the use of CWS as a practical measure of writing skills. Each of these contributions will be discussed.

DI has been empirically supported for a number of subject areas including reading (Adams & Engelmann, 1996), spelling (Darch & Simpson, 1990; Lum & Morton, 1984), and mathematics (Darch, Carnine, & Gersten, 1984; Hastings, Raymon, & McLaughlin, 1988; Rivera & Smith, 1988). The existing line of research in the use of DI and writing is limited to a few studies (Cross et al., 2002; Keel & Anderson, 2002; Roberts, 1997; Walker et al., 2005). The tenants of DI, including fast-paced, well-sequenced, highly focused lessons (Swanson et al., 1999) are effective in teaching in the area of writing. The results of this study are consistent with the previous studies in this area. A visual analysis of the results of these study revealed that the scores of each participant indicated a zero percent overlap between baseline and intervention phases and rapid change between the two phases. According to Barlow and Hersen (1984), a small percent of overlap and rapid change between phases in single subject design are indicators of a functional relationship between independent and dependent variables.

These results are replicated across all participants in this study, clearly demonstrating such a functional relationship between writing instruction through *Expressive Writing I* and the writing skills of high school students with LD. This study supports existing empirical evidence indicating DI methodology promotes student achievement in the area of writing by students with disabilities.

The use of the multiple probe design to assess the effects of writing instruction with students with learning disabilities extends the existing body of literature to include single subject experimental design. Many studies investigating writing interventions for students with learning disabilities at an elementary level used group research designs (Graham & Harris, 2000; Keel & Anderson, 2002; Roberts, 1997; Troia & Graham, 2002). This study investigated growth in writing skills using a single subject research design at the high school level. The single subject method allows for demonstration and replication of a functional relationship between the dependent and independent variables using the individual as the control (Barlow & Hersen, 1984). This method of research is appropriate for this line of research in that it provides the researcher with clear data by which to analyze progress and results of an intervention for each participant. The support of single subject methodology into a line of research previously dominated by group research designs provides researchers with a powerful tool by which to measure effectiveness of interventions in the field and an additional method to analyze the effectiveness of writing instruction for students with LD. Also, exploring the writing skills of high school students with LD is an area for continued investigation.

Finally, the use of CWS as a practical measure of writing skills. This contribution is timely, given recent legislation creating new accountability standards. Legislation such as the Individuals with Disabilities Education Improvement Act (IDEIA 2004) and Title I of the No Child Left Behind Act (U.S. Department of Education, 2001) leave educators no choice but to employ measures that accurately depict student learning. Deno, Fuchs, Marston, and Shin (2001) note that reform movements with emphasis on academic outcomes of students, including those in Special Education have increased focus on the academic growth of students with learning disabilities. A need has emerged for practical standards of expected progress for these students about what constitutes "acceptable" academic growth for students with learning disabilities.

Deno (1985) established several criteria for implementing CBM procedures. First, the measures chosen for CBM must also be reliable. Student performance on parallel forms of the measure must be consistent if practitioners are to use the data to make instructional decisions. Secondly, the measures must be valid with respect to the student's general performance in the academic area. This validity is established by demonstrating a pattern of relations between the selected curriculum-based

measure and other measures that are thought to be important indicators of student performance in the area. Finally, according to the author, CBM must be designed to allow teachers to collect data on a frequent basis. The measures must be of short duration, easy to administer, easy to score, and easy to understand (Deno).

Deno, Fuchs, Marston, and Shin (2001) illustrated how curriculum-based measurement can be used to establish academic growth standards for students with learning disabilities in the area of reading. The development of normative standards in the area of writing adhering to such criteria is still in a formative stage. A few studies employ the curriculum-based measurement of CWS as a measure of students' writing ability (Espin et al., 2000; Tindal & Parker, 1991; Videen et al., 1982; Walker et al., 2005). Results revealed that correct word sequences correlated highly with the number of words written.

The current study adds to this body of knowledge, as CWS are used to assess writing skills and gains in writing skills as measured by this CBM generalize to scores on standardized measures of writing skills. Future studies of this type as well as group study designs employing CWS as a dependent variable are need to continue the establishment of CBM of normative standards of growth for students with and without disabilities in the area of writing. The use of CWS to assess student academic achievement in the area of writing may become as common as measuring "words read per minute" in the area of reading. CWS are valid, reliable, of short duration, and easy to administer, score, and interpret. Equipping practioners with such a tool enables them to gather data by which timely instructional decisions may be made to enhance and individualize instruction to better meet the needs of learners in the classroom.

Limitations

One limitation of this study was that instruction was delivered in instructional groups specifically created for this study rather than in naturally occurring class schedules. That is, students were pulled from a Studies Skills class to receive instruction in the area of writing through *Expressive Writing I*. A more naturalistic environment would have involved the intervention taking place in preexisting instructional groups or classes and being taught by the student's typical language arts teacher.

Additional limitations of this study involve generalization. In this study, maintenance probes were taken from contrived writing assignments given to students for the purpose of this study. Maintenance measures should be taken from assignments generally given within the language arts classroom or from a writing assignment completed in a content area classroom setting to assess whether students are retaining and applying what they were taught in *Expressive Writing* over time and across settings.

Future Research

Limitations of this study could be rectified in future research involving studies conducted in a naturalistic setting, administered by the teacher who typically teaches language arts to the students. Generalization and maintenance measures taken in such a naturalistic setting would strengthen future research studies, as well.

As previously noted, more research is needed to further explore the impact of spelling and other prerequisite writing skills on writing measures. The interaction of such skills and their effects on various types of writing measures needs further investigation.

Such investigation should result in providing practioners guidelines for best meeting the needs of students with special needs. The "gap" that exists between empirically supported best practices and actual classroom practices in the field of special education (Carnine, 1997; Lyon et al., 2001) can be narrowed as empirically supported methodologies are employed by educators. Equipping practioners with the knowledge about the best tools in the field for effective teaching allows those individuals who work with students to address the very essence of Special Education – finding the most effective use of instructional time, given a student's individual strengths and weakness.

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