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Effectiveness of a Test-Taking Strategy on Achievement in Essay Tests for Students With Learning Disabilities

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Research was conducted to ascertain if an essay-writing strategy was effective at improving the achievement on essay tests for 7th- and 8th-grade students with reading and writing disabilities. Students were assigned via a stratified random sample to treatment or control group. Student scores were also compared to students without learning disabilities nominated by teachers as average writers. A 6-step essay strategy was taught that included analyzing the essay prompt, outlining, writing a response, and reviewing the answer. On the posttest, intervention group students significantly outperformed control group students on essay measures related to strategy use, content, and organization. There was no significant difference between treatment group and students without learning disabilities on posttest measures of content and organization.

Keywords: *strategy instruction; written language; quantitative research method*

The importance for students to be competent writers has been highlighted by the recent publication of *Writing Next* (Graham & Perin, 2007). This report presents disturbing data indicating that many students in our schools are not competent writers. In fact, almost three fourths of secondary students do not meet criteria for achieving "proficient" ratings on national, state, and district assessments of writing (Persky, Daane, & Jin, 2003). Poor writing skills not only impact performance in middle and high school classrooms but also have long-range effects on how well students succeed in postsecondary settings and in the workplace. In addition, writing competency comes into play in high-stakes assessment situations including state proficiency tests and gatekeeping assessments such as the SAT and the *Graduate Record Examinations*.

The type of writing required at the secondary level and beyond is typically expository (vs. personal narratives or stories) in nature (Persky et al., 2003). One form of expository writing, persuasive writing, is done for the purpose of explaining and defending a position and involves a variety of skills including (a) understanding the requirements of the expected response, (b) planning with the goal of organizing and structuring an argument or position, (c) constructing the response with adequate supporting details and/or examples, and (d) revising. Often, writing of this nature is done in the context of presenting a written prompt or question to which students are required to respond. An adequate response typically includes a clear introduction and premise, support for the premise, and a conclusion. As noted previously, many students have difficulty constructing adequate written text when faced with these expectations. Students with learning disabilities (LD) fare even worse than their counterparts without disabilities (Graham & Harris, 2003).

The majority of students with LD spend the greater portion of their school day in general education classrooms (U.S. Department of Education, 2004) and are expected to meet the same academic requirements (e.g., essay tests) as students without disabilities. They are also required to take part in statewide assessments, and if they

apply to college or university they are required to take entrance examinations such as the SAT. Thus expository writing is a frequent and important expectation for all students including those with LD. Recent studies have shown that students with disabilities perform well below average on standardized writing assessments (Olson, 2000; Ysseldyke et al., 1998) and that the essays of students with LD are judged to be of poorer quality than those written by students without disabilities (Graham & Harris, 1989).

The overall writing characteristics of students with LD who are struggling writers have been well documented (see Englert, Raphael, Anderson, Gregg, & Anthony, 1989, and Graham & Harris, 2003 for detailed descriptions of writing problems). Problems specific to writing persuasive or opinion essays have also been described and tend to focus on difficulties in understanding the requirements of a question or prompt and planning, executing, and revising answers. With regard to planning a written response, which includes generating and organizing ideas, Graham and Harris (1994) noted that students with writing disabilities truncate this process and give scant attention to the organization of their response. In addition, McArthur and Graham (1987) found that a sample of students with LD spent less than 1 minute in the planning process. This lack of planning and organizing then negatively impacts the actual written response, which typically lacks organization, detail, and sufficient length to fully address the topic. Revision is also given short shrift by students with LD and typically consists of a cursory search for mechanical errors versus a more substantial revision that focuses on clarity and completeness of the response (MacArthur & Graham, 1987).

Several studies have been conducted that examined the impact of interventions on the expository essay writing abilities of adolescents with LD. Wong, Butler, Ficzere and Kuperis (1996) investigated the effectiveness of teaching adolescents with LD a strategy to help them plan, write, and revise opinion essays. In addition to instruction in the strategy, participants in the treatment group were paired for the purpose of collaborative planning and revising though the actual writing was done on their own. In addition, planning sheets were used, as were prompt cards containing sample words and phrases that could be used when writing the various parts of an essay response. Revision activities included teacher-student conferencing along with peer input. Essays were scored for clarity (i.e., lack of ambiguity and cogency [degree of persuasiveness]). Results indicated that the treatment group improved significantly on these measures when compared to the control group.

Page-Voth and Graham (1999) examined the relative effects of teaching a writing strategy and a goal-setting procedure on the argumentative essay writing of seventh- and eighth-grade students with LD. The strategy included steps for brainstorming ideas, including the ideas in their written responses; checking to see if all ideas were included; and establishing whether the goal of the essay was met. The goal-setting component consisted of including a specific number of ideas in the essay as well as refuting a specific number of arguments counter to the student's premise. Students were placed in one of three conditions: goal setting, goal setting plus the strategy, and a control group. Measures used were inclusion of essay elements, a holistic rating of essay quality, and length. Results indicated that overall, the goal-setting procedure had the most impact on student writing, including overall quality and inclusion of refuting arguments.

Finally, De La Paz (1999) taught middle school students, including students with LD ($n = 6$), in general education middle school classes to use a strategy designed to improve their writing of five-paragraph expository essays. A multiple-baseline across classroom design was used to examine the effects of an eight-step strategy designed to help students (a) attend to the prompt, (b) plan their response by listing main ideas and details, (c) write their response using the list, (d) include transition words between paragraphs, and (e) use different types of sentences along with "exciting" words to increase reader interest. Prompts were developed from those used on state assessments and students were given 35 minutes to plan, write, and revise their essays. Measures of strategy effectiveness included the quality of the students' plans, essay length, and essay elements (i.e., including a premise, conclusion, and elaboration) as well as a holistic rating of overall quality. The students with LD improved on all measures but were still performing below the level of low and average-achieving students included in the study.

The purpose of our study is to build on the existing literature by examining the impact of a six-step writing strategy (ANSWER) on the quality ratings of persuasive essays written by adolescents with LD. The ANSWER strategy includes many of the instructional components found to improve students' writing skills in reviews of previous studies (Gersten & Baker, 2001; Graham & Harris, 2003). Specifically, ANSWER includes (a) instruction of the writing process (e.g., writing an outline, revising), (b) instruction of the critical elements to include in the essay (e.g., introductory sentence, supporting details), (c) explicit instruction and guided practice on implementing the strategy, and (d) mastery or criterion-based learning where progression through the strategy is based on students' mastery of the content.

Table 1
Pretest Scores

	General Essay Measure		
	Strategy-Specific Rubric	Rubric Sections Aligned With Strategy	Rubric Sections Not Aligned With Strategy
Treatment group	.7167 (.35)	3.286 (1.15)	6.952 (1.60)
Control group	.7395 (.40)	3.263 (.93)	6.211 (2.04)
Effect size difference (Cohen's *d*)	–.060	.016	.400
Analysis of Variance comparison	$F(1, 38) = 0.04$, $p = .849$	$F(1, 38) = 0.00$, $p = .946$	$F(1, 38) = 1.65$, $p = .206$

Note: Standard deviations are in parentheses.

We chose to use a testlike situation to assess students' acquisition of the strategy. As in the study by De La Paz (1999), planning, writing, and editing was done within time constraints (i.e., 30 minutes), no cue cards or planning sheets were available during writing, and the essay prompts were taken from actual state assessments. In addition, the scoring rubric used to evaluate the quality of essays was similar to those used in several states and was broken into six categories (vs. one global rating) related to writing quality. We were also interested in minimizing the instructional time needed to teach the strategy; we wanted to see not only if the strategy was *effective* but also if it would be *efficient* in the context of the limited amount of instructional time available to teachers.

The study addressed the following questions:

1. Can adolescents with LD acquire and apply a six-step writing strategy designed to improve the quality of their expository essays?
2. Will application of the strategy when writing an expository essay improve quality ratings of the ideas/content and organization of their essays?
3. Will application of the strategy improve the quality ratings on rubric ratings (voice, word choice, sentence fluency and conventions) not targeted by the intervention?

Method

Participants and Setting

Students ($N = 42$) in seventh ($n = 19$) and eighth ($n = 23$) grades with an identified learning disability in written expression and/or reading were participants in the study. In addition, all students had a writing goal on their Individualized Education Program (IEP). A review of student records indicated that all students were identified as learning disabled via a discrepancy model (IQ and performance) following state of Ohio guidelines. Ninety-three percent of the students were Caucasian and 7% Hispanic. Sixty-four percent were male. The average participant age was 13.04. Students received their language arts and writing instruction in regular education classes with special education support. A series of analyses of variance (ANOVAs) indicated no significant difference on pretest scores collected as part of the study between control and treatment group students. See Table 1 for scores on pretests, effect size differences between treatment and control (Cohen's *d*), and ANOVA comparisons.

Two students in the control group were absent during posttesting and therefore were not included in the analysis. This left 21 students in the treatment group and 19 students in the control group. An additional 10 students (7 male and all in eighth grade) without disabilities were used as a comparison group on the posttest. These students were nominated by their teachers as average achievers in written expression.

Students were enrolled in a rural school district located in southwest Ohio. During the 2004–2005 school year, approximately 22% of the school's students were economically disadvantaged and 16% were receiving special education services. The intervention was conducted in eight sessions over 2 weeks during students' 42-minute study hall period. The study hall period was ordinarily used as additional instructional time with the special education staff. Three groups, with an average of seven students per group, received the intervention. The teacher for all groups was a male graduate student pursuing a master's degree in reading education who had previously taught high school language arts. The teacher was trained to implement the strategy by the first author and by reading the instructional manual (Hughes, Schumaker, & Deshler, 2005).

Material

The directions and materials supplied in the Essay Test-Taking Strategy (Hughes et al., 2005) were used to

implement the intervention. Four essay practice sheets were created for use with the control group. Each essay practice sheet contained a prompt used with students learning the essay strategy and general guidelines on how to write an effective essay.

Two essay prompts modeled from statewide assessments were used during pre- and posttesting. Because the intent was to determine writing ability, not background knowledge, the prompts were carefully written to require critical thinking but not to require extensive content knowledge.The pretest prompt was as follows: *Inventions are all around us. Think of an invention that has been especially helpful or harmful to people. Write an essay that gives at least 3 reasons why the invention was helpful or harmful.* The posttest essay prompt was as follows: *Your school newspaper is printing a series of articles about heroes and heroines. Write about someone who is a hero or heroine to you. That person may be someone you know, someone you have read about, a celebrity, or a historical figure. Explain at least 3 reasons why you believe this person is someone to admire.*

Treatment integrity checklists containing the essential instructional components for each lesson were also created.

Design and Procedures

Design. A two-level (treatment or control) single-factor pre/postexperimental design was used to examine the effect of the intervention on students' writing achievement. Students were assigned via random assignment to treatment or control. To control possible confounding effects on outcomes because of students' classroom assignment, we first blocked on classrooms, thereby ensuring an equal number of students from each of the three classrooms were represented in the treatment and control groups. We followed a two-step procedure to randomly assign participants. First, randomized class lists from each of the three study hall periods were generated. Then, within each class, students were assigned to treatment or control using a random digits number chart, with students who received an even number assigned to the treatment group and students receiving an odd number assigned to the control group. This process was continued until half of the study hall's students had been assigned to either treatment or control, at which point the remaining students were assigned to the other group.

Intervention. The Essay Test-Taking Strategy (Hughes et al., 2005) consists of explicit, systematic instruction geared to teaching students a multistep approach to effectively answer essay prompts (see Note 1). Progression through the program is mastery based, with students required to demonstrate skill mastery before moving on to each subsequent section of the intervention.

The strategy (ANSWER) includes the following six steps:

1. Analyze the action words in the question. This step requires students to read the question carefully and underline key words.
2. Notice the requirements of the question. Here students mark key essay requirements and change the question into their own words.
3. Set up an outline. This step requires students to list the main ideas of their essay within an outline format.
4. Work in detail. Here students add important details to the outline that they plan to include in their essay.
5. Engineer your answer. This step requires students to write the essay including an introductory sentence and detailed sentences about each of the main ideas in their outline.
6. Review your answer. Here students check that all parts of the question have been answered and edit their essay.

Daily instruction closely followed the lesson guidelines provided in the strategy workbook. See Table 2 for a breakdown of the topics covered in each lesson. The overall format for the daily lessons was as follows: After the first day when the strategy was introduced, each subsequent day began with an activity that reinforced the concepts learned during preceding days. Second, new information was presented via describing the strategy steps, modeling/demonstrating them via think-aloud procedures, and frequent teacher-student interactions designed to probe understanding and promote elaboration. Third, guided and scaffolded practice was provided, followed by corrective feedback. Finally, information covered during the lesson was reviewed. These instructional activities are similar to those used in previous strategy instruction for students with LD (Deshler, Ellis, & Lenz, 1996; Graham & Harris, 2003).

The first author trained two graduate students to carry out the fidelity data collection. Fidelity data were collected for 100% of the intervention sessions and consisted of checking off lesson steps completed or not completed.

Control group intervention. During intervention implementation, students in the control group attended their study hall period as normally scheduled. To control for the potential effects caused by extra practice intervention that students received writing essays, students in the

Table 2
Lesson Overview

Lesson	No. of Sessions[a]	Lesson Activities
1	1	The purpose of this lesson was to introduce the strategy. It was also designed to get a basic understanding of what students' notions of essay tests were and to introduce the overall instructional model. Students were asked to commit to learning the strategy.
2	1	The purpose of this lesson was to identify the strategies that the students were currently using when writing essays and to introduce the first two steps of the strategy. These two steps dealt with analyzing the question. Students were given a sample essay topic and asked to write a short essay answer. Then the steps of analyzing the action words and noticing the requirements were taught. Students completed these two steps with the sample essay question and revised their answers based on the new analysis of the question. Last, students completed an assessment worksheet. Students had to score 80% or above to move onto the next lesson.
3	2	The purpose of this lesson was to review the first two steps and to introduce the next two steps of the strategy—creating an outline. A new sample essay question was provided and, as a group, the students analyzed the action words and noticed the requirements. A discussion was then held of different topic ideas for the essay. The steps for creating an outline were then taught, and the students practiced creating an outline for the sample essay question. Last, students completed a worksheet where they were asked to create an outline for one of the three topics on the page. Student scores were checked to ensure that they had adequate knowledge of the process.
4	2	The purpose of this lesson was to review the first two steps of the strategy and to more thoroughly review the steps for creating an outline. In addition, the steps for writing an answer were taught. Another sample essay question was provided and students were asked to analyze the question and write their own outline. The next two steps were then taught. Instruction focused on the types of paragraphs and sentences that can be used in an essay. The use of the outline to guide writing the essay was emphasized. Next, students learned to review their answer by checking it against their outline and looking for other punctuation and spelling errors. Last, the students wrote a shorter version of an answer to the sample essay question. These answers were checked again for the demonstration of mastery.
5	1	The purpose of this lesson was to have students verbally practice the steps of the strategy. A rapid-fire questioning technique was used. When each student was able to answer three questions on a particular topic, a new topic was covered.
6	1	The purpose of this lesson was to have students independently practice using the entire strategy. The instructor first briefly reviewed the ANSWER strategy. Then the students were given a new essay question and were asked to engage in the entire strategy on their own. Students' answers were checked for mastery.

a. Number of session indicates how group lessons were structured during strategy instruction. Individual student progression through lesson activities was mastery based, requiring students to demonstrate mastery prior to moving to subsequent activities.

control group completed four essay-writing assignments based on prompts practiced by the experimental students during strategy instruction. Students were unaware that they were the control group but were aware that these specific essays were being collected by university staff. Control group students were provided with the prompts and written direction on the components of a well-written essay (e.g., organized, focused, and supported). The essays were completed during study hall and counted as a class requirement by the students' teachers.

Dependent variables. Students' pre- and posttest essays were evaluated using two rubrics—a strategy specific rubric and a generalized essay measure. The strategy specific rubric consisted of evaluating students' essays based on the implementation of the specific steps and substeps detailed in the Essay Test-Taking Strategy. See Figure 1 for the strategy specific rubric.

The general essay measure, developed by Spandel and Culham (1993), consisted of evaluating essays based on six overall analytical traits: ideas and content, organization, voice, word choice, sentence fluency, and conventions. Each analytical trait was rated on a 5-point scale with 5 being the highest score. Two of the analytical traits (ideas and content, organization) are closely aligned with the skills taught, whereas the remaining four areas were not explicitly targeted by the Essay Test-Taking Strategy. We chose to evaluate the essays using this scale because analytical scales are often used in state writing assessments and this particular scale was recommended as an effective tool to assess the writing skills of students with LD (Isaacson, 1996).

Figure 1
Strategy-Specific Rubric

Step 1: Analyze the Action Words (1 each)
==> Were the key action word(s) underlined once?
_____ / 1

Step 2: Notice the Requirements (1 each)
==> Were the requirements underlined twice?
_____ / 1

Step 3: Set Up an Outline (.5 each)
==> Was an outline constructed?
==> Did the main points/ideas in the outline match the requirements in the question?
_____ / 1

Step 4: Work in Details (1 each)
==> Were relevant details listed under the main points in the outline?
_____ / 1

Step 5: Engineer Your Answer (.2 each)
==> Was there an Introductory Paragraph?
==> Did the Introductory Paragraph contain a rephrase of the question?
==> Was there a Detail Paragraph for each requirement in the question?
==> Did each Detail Paragraph begin with a Topic Sentence related to a requirement?
==> Were detail sentences in included in each paragraph?
_____ / 1

Step 6: Review Your Answer (.5 each)
==> Were all outlined items included?
==> Was the question adequately answered?
_____ / 1

TOTAL SCORE $\frac{\text{Points Earned}}{\text{Total Points}} = \frac{\_\_\_\_\_}{6} =$ **%**

Data collection. The pretest essay was administered the week prior to program implementation, and the posttest was administered the week after program completion. The essays were evaluated by two school psychology graduate students who had extensive experience administering and evaluating assessments. The essay raters were not involved in data collection and therefore were blind to what the intervention was, who was in the treatment and control group, and which essay was the pretest and which was the posttest. Because the strategy-specific rubric may have provided raters with an indication of key strategy components, essays were first evaluated using the general essay measure. A 10-step sequence was used to evaluate the essays.

1. Raters were trained on using the general essay measure.
2. Each rater evaluated a set of practice essays using the rubric. Evaluator practice essays were obtained by compiling essays completed by the treatment and control group students as part of their instructional sessions.
3. The raters compared their scores and came up with a compromised rubric score for each essay.
4. Raters individually evaluated the pre- and posttest essays.
5. Raters' rubric scores were averaged to obtain final general measure rubric scores.
6. Raters were trained on using the strategy-specific rubric.
7. Each rater evaluated a set of practice essays using the rubric. Practice essays were compiled from the essays written by treatment and control students during strategy instruction.
8. The raters compared their scores and came up with a compromised rubric score for each essay.
9. Raters individually evaluated the pre- and posttest essays.
10. Raters rubric scores were averaged to obtain final strategy specific rubric scores.

Table 3
Correlations Between Raters

	General Essay Measure		
	Strategy Specific Rubric	Rubric Sections Aligned With Strategy	Rubric Sections Not Aligned With Strategy
Pretest	.790	.940	.915
Posttest	.883	.955	.925

Table 4
Strategy-Specific Rubric

Group	Treatment	Control	Regular Education
Posttest mean	2.729 (1.62)	.7421 (.37)	1.15 (.31)
Effect size difference (Cohen's *d*)	1.69		

Notes: Standard deviations are in parentheses.

Procedures. The study was conducted following a five-step sequence:

1. Students (n = 42) were assigned via stratified (classroom assignment) random sample to treatment or control group.
2. The pretest essay prompt was administered.
3. Students in the treatment group received instruction in the Essay Test-Taking Strategy over a 2-week period. As per strategy guidelines, progression through the program was determined based on students' mastery of the material. Students in the control group attended their normally scheduled study hall. In addition to normal study hall activities (e.g., working on homework and receiving additional help from special education staff), control group students completed four essay practice activities.
4. The posttest measure was administered to treatment (n = 21) and control (n = 19) group students and to students (n = 10) without LD nominated by teachers as average achievers in written expression.
5. Pre- and posttest essays were evaluated.

Results

Treatment Integrity and Interrater Reliability

Treatment integrity data were collected for all sessions. An overall integrity percentage of 97.9% was obtained with a range per observation between 87.5 and 100%. Final rubric scores were calculated by averaging the two rater scores; correlations between rater scores were calculated for all measures and averaged 90.1. See Table 3 for correlations between raters for all measures.

Strategy Specific Rubric

Students' posttest scores including effect size (ES) differences on the strategy specific rubric are summarized in Table 4.

Students in the treatment group scored an average of 2.729 on the posttest compared to 0.7421 for students in the control group. Analysis of covariance (ANCOVA) results using pretest scores as the covariate indicated that this result (ES = 1.69) was statistically significant, $F(1, 37) = 26.6$, $p < .0001$.

General Essay Measure

Students' pre- and posttest scores including effect size differences on the general essay measure are summarized in Table 5.

Four comparisons were made using the general essay measure. First, a comparison of the mean scores on the analytical trait sections of the rubric (idea and content; organization) that are aligned with the strategy was made between the treatment and control group. Students in the treatment group scored an average of 4.190 on the idea/content and organization sections and students in the control group averaged 3.263. ANCOVA results using pretest scores as the covariate indicated that this result (ES = .68) was statistically significant, $F(1, 37) = 5.54$, $p = .024$.

Second, a comparison of the mean scores on the remaining analytical trait sections of the rubric not aligned with what was taught in the strategy was made between the treatment and control groups. Students in the treatment group scored an average of 8.857 on the remaining rubric sections compared to 7.816 for the control group. ANCOVA results using pretest scores as the covariate indicated that this result (ES = .51) was not significant, $F(1, 37) = 1.50$, $p = .229$.

Third, a comparison of the mean scores on the analytical trait sections of the rubric (idea and content, organization) that are aligned with the strategy was made between the treatment group (4.19) and the regular education students (5.0). ANOVA results indicated that the difference (ES = –.57) between the groups was not statistically significant, $F(1, 29) = 2.42$, $p = .131$.

Fourth, a comparison of the mean scores on the remaining analytical trait sections of the rubric not

Table 5
General Essay Measure

	Treatment	Control	Regular Education
Mean on rubric sections (idea and content; organization) aligned with strategy	4.190 (1.25)	3.263 (1.45)	5.0 (1.56)
Effect size difference (Cohen's *d*)	.68		
Mean on remaining rubric sections not aligned with strategy	8.857 (2.10)	7.816 (2.02)	0.7 (2.26)
Effect size difference (Cohen's *d*)	.51		

Notes: Standard deviations are in parentheses.

aligned with what was taught in the strategy was made between the treatment group (8.857) and the regular education students (10.7). ANOVA results indicated that the difference (ES = –.84) between groups was statistically significant, $F(1, 29) = 4.95$, $p = .034$.

Discussion

In this study we investigated the effects of the six-step essay test-taking strategy, ANSWER, on the written products of adolescents with LD in response to an essay prompt. The strategy was designed to help secondary school students with LD focus on (a) understanding what an essay prompt/question requires in terms of a response; (b) planning for the response by constructing an outline; (c) writing the response using the outline; (d) including introductory, detail, and summary paragraphs; and (e) editing the response to ensure all elements of their outlines were included. It was anticipated that if students applied these steps, their answers would address the question and the content would be fully developed and organized.

Prior to learning the strategy, essays written by both the treatment and control groups were consistent with descriptions of the writing products of many students with LD (Englert et al., 1989; Graham & Harris, 1989, Newcomer & Barenbaum, 1991). There was a general lack of planning (e.g., no students created an outline or used other planning strategies), and responses were typically disorganized and lacked detail. After learning the strategy, the treatment group, when compared to the control group, improved their performance. Although it was not possible to parse out the effects of each step (e.g., did underlining key words and requirements in the prompt vs. the impact of the outlining process have a direct impact on the quality of the content?), as a package the strategy did improve ratings on the two analytical traits aligned with the instructional focus of the strategy: ideas/content and organization.

These findings replicate and add to the growing body of research on writing instruction for adolescents with LD, specifically in the area of writing expository essays. As noted earlier, researchers such as De La Paz (1999), Page-Voth and Graham (1999), and Wong and colleagues (1996) also found strategy instruction that included planning, writing, and editing behaviors improved the essay-writing performance of students with LD. The ANSWER strategy resulted in similar findings in writing situations paralleling classroom and high-stakes testing. Students were able to improve their writing during a 35-minute session without the use of prompts or peer or teacher feedback on their drafts or plans.

Even though students with LD in the treatment group improved their writing compared to students with LD in the control group, their essays still appeared to be of lower quality when compared to students without disabilities. Although not statistically significant, there was a medium effect size difference of .57 in favor of regular education students on the portions of the rubric aligned with the strategy (i.e., ideas/content and organization) and a large and statistically significant effect size difference of .84 in favor of regular education students on the portions of the rubric not aligned with the strategy.

One key component to researching the effectiveness of a learning strategy such as ANSWER is to ascertain whether the strategy was learned and applied and thus whether gains in performance can be attributed to its use. To do so we utilized a measure of strategy to observe whether strategy steps were used when writing the pre- and posttest essays. In addition, during instruction students' mastery of the strategy was monitored. Scores on the strategy use measures imbedded within the treatment activities showed that students were able to master the strategy during instruction. We did observe, however, that strategy use scores were not as high as we would have expected when participants wrote their posttest essays. The mean strategy use scores for the treatment group, although significantly higher than the control group's score, was 2.79 out of a possible 6 points, indicating students were accurately using roughly half of the strategy steps.

When examining the data for individual students, we noticed that there was an easily observable difference between some students in the treatment group: 14 students scored higher than the mean and were using the

first three steps of the strategy accurately, and the remaining students were not. We performed a post hoc analysis for this group of 14 treatment group students by comparing their general (all five traits) essay measure scores with those of the general education students. Based on this comparison we found no significant difference between the mean score of the treatment (13.7) and the general education group's mean score (15.7) on the overall ratings, $F(1, 22) = 2.40$, $p = .136$. Although qualified, this supports the contention that students who apply most of the strategy steps (vs. students who only apply two or three steps of the strategy) may write essays given similar overall ratings as students without disabilities.

A practical implication of this finding is that even though some students with LD were are able to perform a strategy accurately during instructional activities, they may need additional instruction (e.g., practice and feedback) to better generalize strategy use to more authentic academic requirements outside of the immediate instructional setting (Deshler et al., 1996). We intentionally did not provide additional instruction past acquisition (i.e., mastery level) of strategy use on practice activities and did not provide activities to promote generalization, aspects of instruction often needed for some students with LD (Deshler et al., 1996). We wanted to see if strategy use generalized without any prompting. Based on our results, some students (approximately 66%) did not need additional instruction, whereas others did.

Limitations

One limitation of our study relates to generalization. Although we did provide a writing task similar to actual classroom or high-stakes testing, we did not use an actual test. Further research is needed to see if the strategy would positively impact performance on classroom or state examinations. Another limitation was the lack of a maintenance probe. We had planned on administering a maintenance test several weeks after the posttest; however, activities at the end of the school year prevented us from administering the last probe. Another possible limitation relates to participant selection. Although all study participants had writing goals in their IEPs and their pretest performance showed difficulties with writing this type of essay, it would have been useful to have writing performance data from a norm-referenced test to further establish the presence of writing disability. Finally, we did not counterbalance presentation of the writing probes, and it is possible that the content related to the writing prompt may have impacted differences within groups on the pre- and posttest comparisons. However, randomization of participants controls for this possible confound for comparisons between the experimental and control groups.

Conclusions

In summary, it appears that the ANSWER strategy was effective in improving the expository essay writing performance of middle school students with LD. Treatment students scored significantly higher than control students on ratings related to organization and idea quality. It also appears that when students use most of the strategy, their ratings are similar to students without LD on the overall rubric, which includes other traits such as voice, word choice, mechanics, and sentence fluency. It also appears that some students may need additional instruction (i.e., overlearning) before they are able to apply the strategy beyond the instructional setting.

Notes

1. The Essay Test-Taking Strategy was designed to help students respond to a variety of essay test situations. Our study focuses on using the strategy to improve aspects of student writing when presented essay prompts designed to elicit opinion or position essays. A previous study (Hughes & Wilson, 2000) evaluated the strategy's effect on classroom-based essay tests (i.e., based on academic content). A multiple-baseline across three participants, replicated three times, was used. As part of instruction, students were given passages to study in class and at home, and then they responded to an essay question on the passage content the following day. Baseline essays were compared to those written after the strategy had been taught. Results showed that all students' essays improved based on a holistic rating of organization, accuracy, and completeness. The main goal of the study was to establish whether students generalized strategy use when taking general education essay tests and improved their grades. Unfortunately, the general education teachers of the students participating in the study did not give essay tests with any frequency.

References

De La Paz, S. (1999). Self-regulated strategy instruction in regular education settings: Improving outcomes for students with and without learning disabilities. *Learning Disabilities Research & Practice, 14*, 92–106.

Deshler, D. D., Ellis, E. S., & Lenz, B. K. (1996). *Teaching adolescents with learning disabilities: Strategies and methods* (2nd ed.). Denver: Love.

Englert, C., Raphael, T., Anderson, L., Gregg, S., & Anthony, H. (1989). Exposition: Reading, writing, and metacognitive knowledge of learning disabled students. *Learning Disabilities Research, 5,* 5–24.

Gersten, R., & Baker, S. (2001). Teaching expressive writing to students with learning disabilities: A meta-analysis. *The Elementary School Journal, 101,* 252–274.

Graham, S., & Harris, K. (1989). Components analysis of cognitive strategy instruction: Effects on learning disabled students' compositions and self-efficacy. *Journal of Educational Psychology, 81*, 353–361.

Graham, S., & Harris, K. R. (1994). The role of self-regulation in the writing process. In D. Schunk & B. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 203–228). Hillsdale, NJ: Erlbaum.

Graham, S.. & Harris, K. G. (2003). Students with learning disabilities and the process of writing: A meta-analysis of SRSD studies. In L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of research on learning disabilities* (pp. 323–344). New York: Guilford.

Graham, S., & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high school*. New York: Carnegie Corporation.

Hughes, C. A., Schumaker, J. B., & Deshler, D. D. (2005). *The Essay Test-Taking Strategy*. Lawrence, KS: Edge Enterprises, Inc.

Hughes, C. A., & Wilson, B. (2000). *Effects of an essay strategy on the quality of adolescents with learning disabilities' responses to general education classroom essay tests.* Unpublished manuscript.

Isaacson, S. L. (1996). Simple ways to assess the writing skills of students with learning disabilities. *The Volta Review, 98*, 183–199.

MacArthur, C., & Graham, S. (1987). Learning disabled students' composing with three methods: Handwriting, dictation, and word processing. *Journal of Special Education, 21*, 22–42.

Newcomer, P. L., & Barenbaum, E. M. (1991). The written composition ability of children with learning disabilities: A review of the literature from 1980-1990. *Journal of Learning Disabilities, 24*, 578–593.

Olson, L. (2000). Worries of a standards "backlash" grow. *Education Week, 30*, 1–13.

Page-Voth, V., & Graham, S. (1999). Effects of goal setting and strategy use on the writing performance and self-efficacy of students with writing and learning problems. *Journal of Educational Psychology, 91*, 230–240.

Persky, H. R., Daane, M. C., & Jin, Y. (2003). *The nation's report card: Writing 2002* (NCES 2003-529; U.S. Department of Education, Institute of Education Science, National Center for Education Statistics). Washington, DC: U.S. Government Printing Office.

Spandel, V., & Culham, R. (1993). *Analytical trait scoring guide.* Portland, OR: Northwest Regional Educational Laboratory.

U.S. Department of Education, Office of Special Education Programs. (2002). *Twenty-second annual report to congress on the implementation of the Individuals with Disabilities Act*. Washington, DC: U.S. Government Printing Office.

Wong, B. Y. L., Butler, D. L., Ficzere, S. A., & Kuperis, S. (1996). Teaching low achievers and students with learning disabilities to plan, write, and revise opinion essays. *Journal of Learning Disabilities, 29*, 197–212.

Ysseldyke, J., Thurlow, M., Langenfield, K., Nelson, J. R., Teelucksingh, E., & Seyfarth, A. (1998). *Educational results for students with disabilities: What do the data tell us*? (Tech. Rep. No. 23). Minneapolis: University of Minnesota, National Center on Educational Outcomes.

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