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SELF-REGULATED STRATEGY
DEVELOPMENT FOR WRITTEN EXPRESSION:
IS IT EFFECTIVE FOR ADOLESCENTS?

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Self-Regulated Strategy Development for written expression: Is it effective for adolescents?

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Clinical Scenario

Ed is a special educator in a small, urban school system in a Midwestern state. He teaches at a high school with a population of nearly 1700 students. Just over 15% of the school's students have been identified as having special needs. One common academic problem is poor written composition skills. Over half of the school's 11th graders didn't meet the proficiency level on the statewide writing assessment last year, and Ed is concerned about the ability of his students to pass the written language assessment they must take to graduate from the school district. Writing is part of the curriculum, but he is unsure whether the students with special needs are getting enough instruction in writing. Although many teachers require students to write, few of them seem to actually teach students *how* to write. By high school, it seems that students are expected to have enough knowledge to be successful with the writing assignments they are given, without receiving further instruction in composition.

> **Many students in Ed's school exhibit poor written composition skills.**

Ed makes an appointment with his department chair and Wendy, the school's speech-language pathologist (SLP), to discuss his concerns. During their discussion, the SLP iterated Ed's concern about the writing skills of some of the special education population. They both agree that their students have a number of problems that affect their writing. Many of the students don't seem to have basic knowledge of what constitutes good writing. They don't seem to understand written conventions. This includes very basic knowledge such as the fact that stories have characters, setting, and plot. Few of the students take an organized approach to writing or planning compositions. Wendy also notes that many students seem to have difficulty with self-regulation. They are easily distracted and have trouble maintaining effort. All of them agree that most of their students lack the skills required to pass the district's graduation exam. Ed's department chair furthered this concern by noting the expectations of the No Child Left Behind law, which requires schools to make Annual Yearly Progress (AYP), a portion of which is based on student progress in writing. Failure to meet AYP can result in unpleasant consequences for a school. Their high school did not make AYP last year in the special education subgroup. The team expresses a need to teach the writing process in a strategic manner that would be appropriate for a variety of learners with special needs. The SLP notes that it would be good if they could find a strategy that could aid in the writing process as well as the writing product. The group agrees that this would be exactly what they need. However, the group also realized that they did not know much about what strategy would be appropriate or how to teach a strategy.

The team also acknowledges they need to find a strategy that is "research based," that is, one that has been demonstrated to be effective in improving the skills of students who struggle with writing. While getting his master's degree Ed learned about Self-Regulated Strategy Development (SRSD) in one of the courses he took. He wonders if the SRSD model might be useful in working to improve his students' writing skills. After discussing the model with the department chair and SLP, he begins looking for information about the model and its use with adolescent students, specifically with writing. In the remainder of this brief, we describe SRSD and evaluate the research on the model as a tool for teaching writing strategies to adolescents.

Strategies and Strategy Instruction

A strategy is a series of ordered steps that allow a student to perform a task (Reid & Lienemann, 2006). Strategies are much like tools. We use strategies to make a task easier. For example, the mnemonic ROYGBIV is a simple strategy that helps us to remember the colors of the rainbow. Using

a strategy effectively is not automatic. A student must be aware of the strategy and its use to employ it effectively, and the strategy must be practiced until it is mastered (Reid & Lienemann, 2006). In short, for strategies to be effective, they must be taught effectively.

Self-regulated strategy development (SRSD) is a model for *strategy instruction* that has been widely used to teach writing skills (Graham & Harris, 2003). The major goals of SRSD are **1**) student mastery of the higher-level cognitive processes used in writing; **2**) development of independent reflection and self-regulation of strategy used while writing; and **3**) development of positive attitudes about writing (Graham & Harris, 1993). Note that SRSD is *not a strategy*, but rather is a guide for *strategy instruction*. Put simply, it helps a teacher teach a strategy. Using a model insures that a teacher will follow all the steps needed for students to successfully master a strategy and thus can derive maximum benefit from the strategy (Reid & Lienemann, 2006). SRSD consists of six stages. All stages are based on instructional theory. We present the stages in an order that is commonly used; however, note that the stages may be reordered, combined, or even omitted in some cases. The SRSD stages are outlined below.

Stage 1: Develop and activate background knowledge. In this stage, the instructor must determine if the students have the skills needed to perform a strategy. In many cases the instructor will already have this knowledge. If not, the instructor will perform a task analysis to define skills required to use the strategy. Then the students are assessed to ensure they have the necessary skills to use the strategy. Teachers can assess the students by observing the student, or directly assessing their knowledge through a curriculum-based measure or other assessment. After determining the students' skill level, the instructor then discusses the strategy with the student and activates the student's prior knowledge about the topic, in this case, writing. For example, the teacher and students may brainstorm the parts of an essay (Chalk, Hagen-Burke, & Burke, 2005) or identify the requirements of a good story (Graham & Harris, 1993). If a mnemonic device is being taught it would be presented here.

> **SRSD is a model for strategy instruction that involves six steps.**

Stage 2: Discuss the strategy. In the SRSD model, students should be actively involved. This involvement is established by getting students to "buy in," that is, getting students to see the usefulness of the strategy and decide to learn and use it. The instructor is in charge of presenting the strategy and must facilitate the "buy in." First, the purpose, importance and usefulness of the strategy is presented by the instructor. Then the steps of the strategy are introduced. After explaining the steps of the strategy, the instructor and students discuss their current performance. This aids in setting the purpose for learning the strategy. If the students don't clearly see the purpose for the strategy and relate it directly to their own progress they are not likely to learn and use the strategy effectively.

Stage 3: Model the strategy. In order for a student to understand how the strategy works, the instructor must provide a model. Modeling allows the students to see an "expert" learner use the strategy. By using a "think aloud" the thought processes of the instructor are verbalized as they perform the strategy. This provides the students with insight into the metacognitive skills used by effective learners. Students learn the "how" and "why" of the process. This is critical for students with learning problems. It also shows students that the learning process is not passive but requires active thought and effort.

Stage 4: Memorize the strategy. Memorizing the steps of the strategy is very important. If students can't remember the steps of a strategy, they obviously can't perform the strategy. Students need to attain a high degree of mastery. This is so that students do not have to use their working memory to access the strategy steps, and can instead focus on using the strategy. This memorization can be done a number of ways, but providing a prompt or cue card with strategy steps is often beneficial. It is important to note that students do not have to achieve automaticity with the strategy before moving on to the next stage. This stage is ongoing, and strategy steps are reviewed frequently during instruction.

Stage 5: Support the strategy. The support stage is a critical step in the instruction process. By now students are well acquainted with the strategy steps, but need practice in actually using the strategy. In this stage, the teacher and the student work together on strategy use. It follows the scaffolded instruction approach. Just as scaffolding is used to support a building, so the teacher supports the students' use of the strategy. Initially the instructor's support is

intensive. As the student masters the strategy, the support is gradually lessened. Note that progress through this stage is dependent upon the student. Teachers give students more responsibility for performing the strategy as they are able. The goal of this stage is to move the student toward independent use of the strategy.

Stage 6: Independent performance. By this stage, students should be ready to use the strategy on their own. Though working independently, it is important that the teacher monitor the students' performance. Remember that the purpose of strategy instruction is to improve performance. It is also a good idea to check for proper use of the strategy and analyze any deviations to ensure that the strategy is still successful. Additionally, at this stage re-teaching of the strategy, or providing a "booster session," may be indicated.

The Clinical Question

Ed knows that research supports the use of SRSD with younger students, but is unsure about the availability of research on the model's use with adolescent writers. Before beginning his research, he develops a question to guide his search: Can using SRSD improve the writing quality of adolescents with learning difficulties?

Search for Evidence

Ed's initial search for studies begins with a search using the PsychINFO electronic data base. PsychINFO is a very useful tool because it contains literally tens of thousands of research articles. Additionally, all of the articles in the database have undergone a peer review process. Peer review is a vetting process that ensures the validity of a study. This allows Ed to be confident in the studies he finds. To begin, he searches the databases using the key words *self-regulated strategy development, writing,* and *adolescents.* Finding nothing, he eliminates the term *adolescents* and locates 19 articles. Articles that were not scientific studies or those involving participants that did not fit the established criteria were eliminated. Ed also contacted a former professor about research on this topic, and the professor provided him with a review paper on SRSD. Many of the studies in the review concerned adolescent writing instruction.

> **Ed located and analyzed nine studies examining SRSD in his evidence-based process.**

Evaluating the Evidence

Here, we consider Ed's findings from this review process, noting that Ed's research may not have located every study addressing SRSD and adolescent writing. However, given that his goal was to locate support for using SRSD with the students in question at his high school, Ed's technique and the studies located should be sufficient for determining whether SRSD can be used with confidence for the population of interest.

Ed located 9 articles for his review. Knowing that careful consideration must be given to the quality of the evidence, Ed examined each article using the guidelines presented in *Essential and Desirable Quality Indicators for Group Experimental and Quasi-Experimental Research Articles and Reports* (Gersten, Fuchs, Compton, Coyne, Greenwood, & Innocenti, 2005). These quality indicators were proposed as a standard for determining whether a practice can be considered evidence-based. Ed compared each of the studies he located to the indicators to establish which could be used to support his research question, as shown in Table 1. Four of the studies met all of the indicators. The remainder met all but one or two. The samples in four larger studies were randomly assigned. Ed knows that random assignment is important because it strengthens confidence in results. Based on this, Ed has confidence that the studies he has located would meet the standards for evidence based practices.

Ed carefully examined the types of students included in the studies he found. He wanted to make sure that they were similar to the students in his high school; otherwise, he would not have confidence that the research would generalize to his students. The nine studies (see Table 2) included in Ed's review included a total sample size of 450 students between fifth and tenth grade. Of the 227 participants receiving intervention, 139 were identified as having learning disabilities (LD), 2 with attention deficit/hyperactivity disorder (ADHD), 1 with a speech/language impairment, 1with bilateral conductive hearing loss, and 1 LD co-morbid with ADHD. The remaining 84 were not identified as having specific disabilities. All but one of the studies included SRSD instruction in expository writing, planning, composition, and/or revision. The study that did not address expository writing examined story writing of young adolescents in 5th and 6th grade. One of the studies involved only students in general education, specifically eliminating students with disabilities from the sample.

This was interesting to Ed because the team might wish to use the strategy in the general education classroom.

Ed also examined the procedures reported in each study carefully. He wanted to see if one particular strategy was more promising. He also wanted to be sure that the strategies were practical for his environment. A strategy that took too much time or resources wouldn't be useful. Students received instruction for between 8 and 25 sessions for 20 to 50 minutes each session. For most of the studies, instruction took place 3 to 5 days a week, over a period of 2 to 8 weeks. It is important to note that in 8 of the studies instruction continued for no more than 3 weeks. Instruction was provided in small groups of 2 to 8 in seven of the nine studies. Overall, Ed decided that any of the strategies could be used in his high school.

Many of the studies Ed located involved very small numbers of students, many without separate control group comparisons. These small sample studies — termed single subject or small N designs — are well validated and accepted. Single-subject research does not mean just one participant, but usually a small group of between 3 and 8 participants. In single-subject designs, each participant acts as his/her own control. Researchers using this model repeatedly measure a variable (e.g., number of words written, story quality) to document change over time. In the field of special education, single-subject designs are particularly relevant because they examine educational practices at the individual learner level and directly assess the relationships between interventions and outcomes as well as the similarity between the conditions in the study and those found in actual classrooms (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005).

Ed paid particular attention to the outcome measures reported in the studies. The team was most interested in strategies that help students write longer papers that were higher in quality. There was a great deal of similarity between the outcomes being measured in the 9 studies. All examined the quality of student writing using a variety of specific indicators including fluency and organization. Six of the studies examined length, quality and story /essay elements (i.e. essential components such as setting, character, topic sentences) included in the student's writing. Other outcomes included strategy transfer, student planning, vocabulary and attributions.

All of the single-subject studies focused on expository text. Students' writing improved in each of the studies. Students in the Sexton, Harris and Graham (1998) study improved their number of included essay elements by over 150%. In De La Paz (2001), the students' essay quality improved by nearly double. Similarly, participants in Sexton, Harris, and Graham (1998) increased their essay quality by 150%. Group studies also reported differences. The students in Monroe and Troia's (2006) study who received strategy instruction increased their number of functional essay elements by 45%, 17%, and 6%, as opposed to the control group who actually declined in their use of essay elements. In each, the authors noted gains in the quality of the students' writing.

Students' writing improved in all of the studies that Ed reviewed.

Some of the studies reported effect sizes. Ed wasn't sure exactly what these were or how to interpret them, and he decided to do a little more research. Ed soon found that effect sizes are very useful and also are simple to interpret. Effect sizes provide an estimate of the magnitude of treatment effects. This allows educators to assess the practical benefits of an intervention. Effect size is also independent of sample size, allowing studies with widely different sample sizes to be compared with a standard measure. Interpreting effect sizes is straightforward. Broadly speaking there are three categories, small (0 to .2), medium (.3 to .7), and large (> .7). Ed was pleased to see that the effect size for the components of essay length, quality and persuasiveness, were excellent, ranging from 0.74 to 1.71. Ed also noticed that in all but one case the effect sizes were greater than 0.8 at the time of the maintenance probes. This meant that benefits maintained over time and provided evidence of the large effect of the strategy in improving students' writing.

The Evidence-Based Decision

Ed, the chair of the Special Education department, and the school's SLP are searching for an evidence-based practice that can be used to improve the writing skills and quality of their struggling high school writers. Relying on his knowledge of the research supporting SRSD, and his research on the model's use with adolescent writers, Ed must make a decision on its effectiveness to present to his team.

Two weeks after their first meeting, the team gathers once again to review Ed's findings. Ed shares the processes he followed for gathering the studies he reviewed and explains how he evaluated the findings in each study. Ed then presents his thoughts on the use of SRSD with their group of struggling writers. Based on the depth of the model's research base overall, and the improvements in all parts of the writing process found in the adolescent studies, Ed suggests to the team that they create an implementation plan, focusing on using the SRSD model to improve

student writing. By establishing an implementation plan, the team can create a timeline and determine which classes will participate in the model's implementation, and ensure that teachers receive the necessary training to effectively teach the strategy.

As a part of the process, Ed compiled a list and brief description of the strategies used in the studies he located, as shown in Table 3. The team then plans to spend the next two weeks considering which of the research-supported strategies would be most appropriate for use with their students for the types of writing required by the state and district writing assessments. Once the team has decided on a strategy or strategies the team will put forth the plan to the school as a whole and present the time lines for implementation. Importantly, the team can emphasize the quality and extent of research that supports use of SRSD, so that end-users (i.e., SLPs, educators) can incorporate this into their evidence-based decision-making.

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Table 1. Evaluation of Study Quality (I=inadequate; U=unclear; A=adequate; NA = not applicable)

Criteria	Chalk, Hagen-Burke, & Burke (2005)	Monroe & Troia (2006)	De La Paz (2001)	Sexton, Harris & Graham (1998)	Garcia-Sanchez & Fidalgo-Redondo (2006)	De La Paz (2005)*	De La Paz & Graham (2002)	De La Paz & Graham (1997)	Sawyer, Graham, & Harris (1992)
Sufficient information provided to determine/confirm whether the participants demonstrated the disability presented	A	A	A	A	A	A	A	A	A
Appropriate procedures were used to increase the likelihood that relevant characteristics of participants in the sample were comparable across conditions	NA	U	NA	A	A	A	A	A	A
Sufficient information was given characterizing the interventionists or teachers	A	A	A	A	A	A	A	A	A
Intervention was clearly described and specified	A	A	A	A	A	A	A	A	A
Fidelity of implementation was described and assessed	A	U	A		A	A	A	A	A
The nature of the services provided to the control conditions are described	A	A	A	A	A	A	A	A	A
Multiple measures used to provide an appropriate balance between measures closely aligned with the intervention and measures of generalized performance	A	A	A	A	A	A	A	A	A

Table 1. (continued)

Criteria	Chalk, Hagen-Burke, & Burke (2005	Monroe & Troia (2006)	De La Paz (2001)	Sexton, Harris & Graham (1998	Garcia-Sanchez & Fidalgo-Redondo (2006)	De La Paz (2005)*	De La Paz & Graham (2002)	De La Paz & Graham (1997)	Sawyer, Graham, & Harris (1992)
Outcomes for capturing the intervention's effect were measured at the appropriate time	A	A	A	A	A	A	A	A	A
Data analysis techniques are appropriately linked to the unit of analysis in the study	A	A	A	A	A	A	A	A	A
The research report includes inferential statistics and effect size calculations	NA	NA	NA	NA	A	A	A	A	U

Based on: Essential and Desirable Quality Indicators for Group Experimental and Quasi-Experimental Research Articles and Reports
* *Study included no students with disabilities*

Table 2. Description of Studies in Review Corpus

Study	Design	Sample Description:	Intervention	Outcome/Results
Chalk, Hagen-Burke, & Burke (2005)	Repeated-measures n=15 Convenience sample	10th graders 2+ years below grade level in 1+ academic achievement areas	Expository writing strategy (DARE) 5 sessions of 20-25 minutes Administered by teachers during 50 min class period	Increased number of words used in essay Increased quality of writing in essays
Monroe & Troia (2006)	Repeated-measures n=12 (3 intervention, 9 control. In control: 3 special education control, 6 general education control)	Grades 6-8 Special Education groups: IQ range of 79 – 97	Multi-component instruction: Expository & narrative writing (DARE & SPACE), Revising (CDO & SEARCH) 14 sessions (2 weekly) of 45 minutes Small group instruction.	Gains in all 5 essay writing areas (85% increase in organization; 76% increase in content; 55% increase in sentence fluency; 45% increase in word choice; 25% increase in conventions). Gains didn't generalize from expository to narrative writing
De La Paz & Graham (1997)	Repeated Measures n=42 Random assignment into 4 conditions (2 instructional, 2 comparison)	11 5th grade, 15 6th grade, 16 7th grade with LD Achievement at least 1 SD below average in 1+ academic area	Advanced planning (STOP & DARE) /dictation Advanced planning (STOP & DARE)/writing	SRSD groups scored significantly higher than the comparison groups in nearly all areas evaluated (advanced planning, propositions, transformations, essay length, essay elements, coherence, essay quality, rate, strategy use, and social validation)

Table 2. *(continued)*

Study	Design	Sample Description:	Intervention	Outcome/Results
Sawyer, Graham, & Harris (1992)	Repeated Measures n=56 (33 LD instructional; 10 LD nonrandomized control; 13 normative comparison – non-LD)	Students with LD 5th & 6th grade LD label Achievement of at least 2 years below grade level in 1+ academic area Comparison group (post-test only) No special education services	3 instructional conditions (direct teaching; SRSD w/o explicit self-regulation instruction; full SRSD) Small group instruction (2-3 students) 3 sessions weekly for about 3 weeks 20-56 minutes per session	Higher story grammar scores for SRSD SRSD (full) group most successful at promoting generalization
De La Paz & Graham (2002)	Quasi-experimental N=58 (30 experimental; 28 control) 5 teachers experimental & control group randomly assigned to 10 language arts classes (6 experimental; 4 control	7th & 8th graders Experimental group 30 students Mean age 13 Control 28 students Mean age = 12.10 No students identified as having disabilities	Planning & Expository writing (PLAN & WRITE) 4 days/week for 6 weeks	Plans of SRSD group better developed than control group At post & maintenance, SRSD group wrote significantly longer papers (effect size = 0.82, 1.07) SRSD group used significantly more words of 7 or more letters (post-test effect size = 1.13; maintenance = 0.94) SRSD group papers were judged to be of higher quality than control at post-test & maintenance (effect size 1.71, 0.74)

Table 2. Description of Studies in Ed's Review Corpus (continued)

Study	Design	Sample Description:	Intervention	Outcome/Results
Sexton, Harris & Graham (1998)	Small N n=6	Grades 5 & 6 All students identified as LD 2+ years below grade level in in 1+ area(s)	Expository writing strategy 8-10 sessions of 40-50 minutes Taught in pairs	Number of essay elements increased by over 150% Quality improved by over 150% Number of words written increased by a minimum of 120% Amount of nonfunctional information included decreased
Garcia-Sanchez & Fidalgo-Redondo (2006)	Between Groups n=121 Students randomly placed in experimental or control groups	Grades 5 & 6 Age range 10-12 All students identified as SLD in writing	SRSD Planning, Expository writing & revising strategies taught (POD +THE VOWELS & RED) All groups received 25 sessions (3 times weekly), 50 minutes a session 6-8 students per small group	SRSD increased planning, writing, and revision measures over the standard curriculum SRSD significantly increased the time spent planning
De La Paz (2001)	Small N n=3	Ages 14, 14, & 13 2 with ADHD label	Planning & Expository writing strategies (PLAN & WRITE) Individual instruction	Increased planning time, number of essay elements, and length of essays written Essay quality doubled on average

Table 2. (continued)

Study	Design	Sample Description:	Intervention	Outcome/Results
De La Paz (2005)	Between Group N=133 (70 intervention in disability, average, and talented subgroups, 63 control in average and talented subgroups Nonrandomized groupings	8th grade **Experimental group** *Disabilities* 11of 12 students with disabilities labeled LD *Average* 39 students *Talented writers* 19 students **Control Group** *Average* 46 students *Talented writers* 17 students	Experimental group Multi-component instruction (historical reasoning & argumentative writing (STOP & DARE)) Historical reasoning - 12 days Writing – 10 days Control group received no instruction in historical reasoning or argumentative writing strategies	SRSD group's papers significantly longer than control group SRSD groups' papers rated as significantly more persuasive than control condition (post-test papers of disability group rated nearly as well as pre-test papers of high-ability group) More arguments after learning the strategies SRSD group papers more historical accuracy than control conditions Effect sizes of 1.23 (length), 1.19 (persuasive quality), 1.17 (number of arguments)

Table 3. Strategies Used in SRSD Studies

Strategy	Description	Use
DARE (1)	**D**evelop topic sentence **A**dd supporting detail **R**eject arguments from the other side **E**nd with a conclusion	Defining, identifying, and generating the basic parts of an essay.
DARE (2)	**D**evelop a position statement **A**dd supporting arguments **R**eport & refute counterarguments **E**nd with a strong conclusion	Defining, identifying, and generating the basic parts of an opinion essay.
SPACE-	**S**etting elements **P**roblems **A**ctions **C**onsequences **E**motions-	Remembering the structure of narratives to plan stories
CDO	**C**ompare **D**iagnose **O**perate	Revision
SEARCH	**S**et goals **E**xamine paper to see if it makes sense **A**sk if you said what you meant **R**eveal picky errors **C**opy over neatly **H**ave a last look for errors	Revising and editing
PLAN	**P**ay attention to the prompt **L**ist the main ideas **A**dd supporting ideas **N**umber your ideas	Generating an essay
WRITE	**W**ork from your plan to develop your thesis statement **R**emember your goals **I**nclude transition words for each paragraph **T**ry to use different kids of sentences **E**xciting, interesting, $100,000 words	Planning and writing an essay
RED	**R**ead the text **E**valuate the different substantial and mechanical aspects of the text, to see if they are right or wrong **D**o necessary changes	Revisions

Table 3. (continued)

Strategy	Description	Use
STOP	**S**uspend judgment **T**ake a side **O**rganize ideas **P**lan more as you write	Planning and writing a position papers
POD + The VOWELS (O+A+I+U+E)	**P**ick ideas **O**rganize your ideas following the vowels **D**evelop your text **O**bjective or purpose of the text **A**udience, suitable content according to the audience of the text **I**deas, generation of ideas related to similarities and differences of themes **U**nited ideas, organization of ideas into similarities vs. differences, and hierarchical structure of main and secondary ideas **E**ssay draft, to develop the text	General planning steps Generate, organize, and structure a compare-contrast essay