THE EFFECTS OF SELF-GRAPHING ON THE WRITING PERFORMANCE OF
SECOND GRADERS

Thesis
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ABSTRACT

Writing, an integral part of everyday life, is the most complex form of communication. For most people, proficient writing is necessary to function in school, the workplace, and the community. In school, writing is often the primary means through which students demonstrate their learning. The purpose of this study was to examine ways to increase writing productivity for elementary students. Specifically, a multiple baseline with an embedded reversal design was used to examine the effects of self-graphing and indiscriminable contingencies on the writing productivity of typically developing second graders. In general, there were minimal differences between experimental conditions for each student. However, for some students, evidence of a possible functional relationship was demonstrated for at least one of the dependent variables. Limitations, future directions, and implications for practice are provided in the discussion.
DEDICATION

Dedicated to my very loving parents, Bill and Jill. Thanks for all of your encouragement and support. I love you!

To my brother Lee, who is a smart, free spirit with whom I look up to, even if you’re on the other side of the world!
ACKNOWLEDGMENTS

I would like to thank my advisor, Dr. Sheila Alber Morgan, for all of her guidance and support these last few years. I would also like to thank my second reader, Dr. Diane Sainato, for taking the time and interest to be on my thesis committee. I am grateful to Courtney Fleming for all of her help, advice, and expertise on this big project. Finally, I would like to thank my 5-second grade students for all of their hard work and putting in the extra effort to be a part of my study!
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Publication

Instructor, May/June, 16.

Letter-Elementary School, page 23

FIELDS OF STUDY

Major Field: Education
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CHAPTER 1

LITERATURE REVIEW

Writing instruction has not been emphasized enough in U.S. Education. According to the National Association of Educational Progress (NAEP; Persky, Daane, & Jin, 2003), only about one quarter of fourth, eighth, and twelfth graders scored at the Proficient level on the NAEP writing exam. Writing is the primary basis upon which an individual’s work, learning, and intellect will be judged—in college, in the workplace, and in the community. Students who learn to be proficient writers have a powerful tool for learning, studying, communicating, expressing themselves, reflecting and increasing their quality of life. Writing is also an essential job skill. (Brown University and the University of Missouri, 2007). Most contexts of life (school, the workplace, and the community) call for some level of writing skill, and each context makes overlapping, but not identical, demands. Proficient writers can adapt their writing flexibly to the context in which it takes place.
In the school setting, writing plays two distinct but complementary roles. First, it is a skill that draws on the use of strategies (such as planning, evaluating, and revising text) to accomplish a variety of goals, such as writing a report or expressing an opinion with the support of evidence. Second, writing is a means of extending and deepening students’ knowledge; it acts as a tool for learning subject matter. Results from the NAEP writing exam showed that a very large number of adolescents need interventions to help them become better writers (Graham & Perin, 2007). Therefore, teachers must start good writing instruction in the early grades in order to build upon these skills in the future.

Writing is a form of communication that allows students to put their feelings and ideas on paper, to organize their knowledge and beliefs into convincing arguments, and to convey meaning through well-constructed text. In its most advanced form, written expression can be as vivid as a work of art. As children learn the steps of writing, and as they build new skills upon old, writing evolves from the first simple sentences to elaborate stories and essays. Written expression is the ability to write down information and ideas (using sentences, correct grammar and spelling) such that the intent of the author is clear and can be understood by others. It is a complex process (Margaret J. Kay 2006). Struggling writers often have difficulty with handwriting, spelling, grammar, organization and self-regulation. There writing pieces tend to be more brief, less-focused, lacking in detail and containing more irrelevant information. Additionally, struggling writers have difficulty assessing how well their writing corresponds with their purpose (Santangelo & Quint, 2008). Good writing is produced in classrooms where teachers establish high expectations, a supportive environment, and frequent opportunities for

**Self-Management**

“Self-Management is the personal application of behavior change tactics that produces a desired change in behavior” (Cooper, Heron, Heward 2007, p. 578). For example, if a person eats a low fat chocolate chip cookie instead of her usual chocolate cake for dessert, she is exhibiting self-control. The person is replacing a high calorie dessert for one with fewer calories in order to obtain the desired result of weight loss.

Self-control are those behaviors that a person deliberately undertakes to achieve self-selected outcomes (Kazdin’s 2001). Self-control is considered purposeful in that a person self-selects or customizes her choices in order to obtain the desired result. When self-management is implemented in a behavior change project, the person controls one or all of its components. The terms self-management and self-control seem very much alike, however are characterized differently. Epstein (1997) defined self-control as a person acting “in some way in order to change subsequent behavior” (p. 547). Brigham (1980) suggested that self-control is an "inherently misleading" term because it suggests that the ultimate control of behavior lies within the person (Brigham, 1980). Self-management is the focus of the current study and is very important because it “can help a person be more effective and efficient in his daily life, replace bad habits with good ones, accomplish difficult tasks, and achieve personal goals” (Cooper, Heron, Heward 2007, page 579).

There are many advantages to those who learn to manage their own behavior. Self-management strategies can help students increase desired behaviors; decrease undesired behaviors, generalize behavior change to other environments or situations, and
maintain those behaviors over time (Cooper et al. 2007). Teaching self-management is efficient because a few self-management skills can be applied to many behaviors. For example, if self-graphing is effective for increasing oral reading fluency for a child, it may also be effective for increasing productivity in other academic areas such as writing and mathematics.

The following are additional benefits of self-management (Cooper et al., 2007):

- Some people perform better under tasks and criteria that they have selected. A child is likely to choose criteria or tasks that he enjoys, is capable of, and can easily adhere do.

- Teaching students self-management skills can provide practice in other academic areas. A child may learn to go back and check over all work completed for quality during an in-class math lesson, then go home and execute these skills after homework is completed.

- Those with self-management skills are more likely to fill their potential, contribute to society, and behave in ways that can benefit themselves and society.

- Self-Management is an ultimate goal of education.

“Several antecedent self-management strategies can be utilized. Antecedent-based self-management strategies are implemented before target behavior occurs to increase or decrease the likelihood of the behavior” (Cooper et al., 2007, p. 587). For example, one antecedent self-management strategy is using a response prompt, such as a post-it note.
Leaving a post it on the computer screen as a reminder to send an important e-mail will increase the likelihood of an individual sending the important e-mail message. Providing response prompts is one antecedent based strategy.

Another antecedent based strategy is manipulating motivating operations to make a desired or undesired behavior more or less likely. For example, if you have dinner plans to eat a fancy restaurant at 8:00, you may eat lunch early around 11, in order to have maximum enjoyment of your meal at dinner. You are controlling your behavior and creating an EO in order to increase the reinforcement of the future event. On the other hand, a person may eat a large meal before she goes grocery shopping to avoid buying foods that are high calorie or fattening. This is an example of manipulating motivating operations to decrease a future behavior.

Another antecedent based self-management strategy is performing the initial steps of a behavior chain. For example, before an individual leaves his house for work, he hears a weather report stating that it may thunderstorm that day. So, he places his coat and umbrella by the door as a reminder to take it with him when he leaves for work later.

Removing the materials required for an undesired behavior is another antecedent-based self-management tactic that alters the environment so that an undesired behavior is less likely, or better yet, impossible to emit. For example, the boy decides to cancel his cable and remove all the televisions from his home in order to eliminate all the time he has wasted watching it instead of going to work and doing his homework.

Finally, limiting an undesired behavior to restricted stimulus conditions decreases the future likelihood of that behavior. For example, a child who complains is more likely to complain when others are present. His parents told him that he may only complain in
the “sad chair” that was placed in the guest bedroom upstairs (free of other people). The child may be less likely to engage in these behaviors if he has to sit in seclusion without the attention of anyone around. These are all examples of antecedent based self-management tactics. Self-monitoring is an example of a consequence based self-management technique.

**Self-Monitoring**

Self-monitoring is another form of self-management whereby a person systematically observes and records his or her own target behavior (Cooper et al. 2007). Often, self-monitoring changes behavior and the change is typically in the educationally or therapeutically desired direction. Self-monitoring can be used to help decrease smoking and reduce overeating. It can also be used to help students with and without disabilities be on task more often in the classroom, decrease talk-outs and aggression, improve their performance in a number of academic areas and complete homework assignments. Some researchers believe that self-monitoring is effective because it evokes self-evaluative statements that serve to either reinforce or punish undesired behaviors. Self-monitoring is frequently a component of an intervention that includes reinforcement for achieving self- or teacher-selected goals (e.g., Christian & Poling, 1997; Olympia, Sheridan, Jenson, & Andrews, 1994; Rhode, Morgan, & Young, 1983). If self-monitoring is difficult or time consuming it will be ineffective and disliked by the participant. It should be easy and efficient for the participant to manipulate. Paper and pencil, wrist counter, hand tally counters, timers, and stopwatches can be used for self-monitoring. Recording forms can be used to self-monitor specialized tasks and should be kept simple
and easy to use. Auditory prompts (e.g., chimes) can be used to cue younger students to self-record on their forms.

Several studies support the use of self-monitoring as a way to improve students’ behavior and academic skills. For example, Maag and Reid (1993) studied the differential effects of self-monitoring attention, accuracy and productivity. Six elementary school students participated in the study. All subjects were identified as learning disabled. When the study was initiated, students were working on basic addition, subtraction and multiplication skills. Data were collected during 30-minute independent mathematics practice sessions in one sixth-grade and two fourth-grade general education classrooms. Percentage of on-task behavior, academic productivity, and academic accuracy were measured during a 40-minute period. A combined multiple schedule design and multiple baseline across subjects was used to assess the effects of self-monitoring. Students were trained using a Model, Lead, Test method in each of the self-monitoring procedures. At the beginning of each session, students would be reminded of the type of self-monitoring procedure they would be using. The treatment order each day was randomly selected. Self-monitoring was faded using a sequential withdrawal design. The mean percentage of intervals on-task increased noticeably for all but 2 students. Each student’s choice of self-monitoring procedure resulted in optimal academic performance. All subjects improved in at least one treatment condition. Percentage of problems completed correctly also improved for all students in at least one of the treatment conditions. These results lend support to the effectiveness of self-monitoring productivity or accuracy.

Wood, Murdock, Cronin, Dawson, and Kirby (1998) evaluated the effects of self-monitoring on increasing the on-task behaviors of four at-risk middle school students and
examining indirect effects on academic performance. Two observers recorded on-task behavior for 40-minutes of each class period using a 1-minute momentary time sampling procedure. Ten observations per student per class were done. A multiple baseline design across three academic settings and replicated across four students was used to evaluate the effects of the self-monitoring intervention. During baseline, students had to meet stability criterion for classroom settings before the self-monitoring phases began. The self-monitoring was introduced into one of the academic settings. When the intervention data was 50% greater, the self-monitoring intervention was introduced in the next academic setting. During the self-monitoring intervention condition, students recorded their own on-task behavior using their self-monitoring sheets at the end of each experimental class period. Each class period was about 50 minutes in length. On-task behaviors for the four students clearly and immediately improved in each setting as each student sequentially began to monitor his or her on-task behaviors. These improvements remained stable or accelerated slightly for 3 out of the 4 students. On-task scores ranged from 60%-100% for the four students during the intervention phase. The multiple baseline data revealed that self-monitoring increased on-task behavior of the four at-risk adolescents in their language arts, reading, and computer classes. Another form of self-monitoring is self-graphing, in which students are able to produce a visual display of progress as they track and record their target skills.

Self-Graphing

Self-graphing involves a student using a graph to chart and monitor his or her progress on a specific target behavior. For example, the student graphs the total number of words he or she writes each day. The student is able to visually determine progress
made throughout sessions. There are many benefits of self-graphing. First of all, self-graphing actually improves student performance on whatever target behavior is being self-graphed (Kasper-Ferguson & Moxley, 2002). Next, adding a self-graphing component to other self-management procedures seems to further enhance the effectiveness (Gunter, Miller & Venn, 2002). Self-graphing provides the student and teacher with a clear picture of academic progress.

Fink and Carnine (1975) investigated the effects of self-graphing and informational feedback of arithmetic errors. An ABAB reversal design demonstrated that combining informational feedback with self-graphing substantially decreased the number of math fact errors for ten first graders.

Another study investigated the effects of self-graphing of written expression. Stotz et al. (2008) used a multiple baseline design across students to examine the effects of self-graphing on writing production and quality for 3 fourth graders with learning disabilities. In the resource classroom, data were collected 4 days a week during the whole-group language arts block. Three dependent variables measured in this study were: total words written, number of correct word sequences, and number of correct punctuation marks. TWW was defined as the total number of words written, in response to a story starter, during a 3-minute timed period of writing. Correctly and incorrectly spelled words were both counted. During baseline, the researcher counted the TWW and recorded this number on a graph each day. During the intervention, the students counted and graphed the number of words they wrote. The researcher continued to count and graph the TWW. Similar procedures were administered for CWS and CPM. The experimenter administered each writing probe to all of the students using the following
procedure. A student randomly selected a story starter written on an index card. The story starter was read aloud and students had one minute to think about it and 3 minutes to write. The story starter was repeated 2 times aloud. At the end of 3 minutes, samples were scored for TWW, CWS, and CPM. In the self-graphing intervention condition, the students wrote their stories following the same procedure as during baseline. Immediately following the writing probe, the student who was in intervention met with the experimenter for self-graphing. The results of this study indicate that the self-graphing intervention was effective for increasing the quantity of writing. Students were also able to improve or maintain the quality of their writing, demonstrating a functional relationship between self-graphing and correct word sequences as well. Students were writing more without losing any quality. There was no relationship established between self-graphing and the number of correct punctuation marks used.

The current study is a systematic replication of Stotz et al. (2008). The researchers attempted to extend previous research of the target behavior (increasing the quantity of writing), the purpose (determining the effects of self-graphing on writing productivity), and one of the curriculum based measures studied (total words written). Both studies also examined the students’ opinions about self-graphing procedures and effects.

In the current study, the students were typically developing second graders as students with LD in the Stotz study. Additionally, the students in this study self-graphed self-generated words, total words written, and self-generated words used in the story. The students in Stotz study only graphed total words written and experimenters assessed correct word sequence, total words written, and correct punctuation.
The current study also used indiscriminable contingencies. “An indiscriminable contingency is one in which the learner cannot discriminate whether the next response will produce reinforcement” (Cooper et al., 2007, p.636). For example, a number representing word count criteria was selected by the teacher at random and revealed to the students after the writing task was completed. If students met the total word count criteria, they would receive a reward. A word was also selected at random and revealed to students after the writing session was completed. If students used that word in their SGW, TWW or both, they received a reward.

Purpose of the study

Previous research demonstrates that self-graphing is an effective strategy for increasing the production of student writing. The current study extends previous research by examining the effects of self-graphing on typically developing second graders. Additionally, this study extends previous research by examining the effects of indiscriminable contingencies combined with self-graphing on student writing.

Before data collection began, the researcher obtained approval from the Institutional Review Board (IRB) at The Ohio State University. The IRB approved the method described below and the forms used to acquire informed consent. A letter from the principal of the participating school was submitted to the IRB documenting her willingness to participate and granting permission for a teacher within her school to participate. In addition, all participants had parental consent as well as student assent for participation in the research study (See Appendix A).
Research Questions

1. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by self-generated words (SGW)?

2. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by total words written (TWW)?

3. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by self-generated words in story (SGWS)?

4. What are the opinions of students of the interventions and outcomes used in this study?
CHAPTER 2

METHOD

This chapter will describe the participants, setting, definition and measurement of dependent variables, materials, experimental design, experimental procedures, and procedures of assessing interobserver agreement (IOA) and procedural reliability.

Participants

The participants in this study were five second graders (ages 7 to 8) who attended a general education classroom in an urban charter school in central Ohio. All five students were academically high performing, read at the fourth grade level, and participated in a class wide direct instruction curriculum for reading, language, and math. All five students had legible handwriting and were able to write complete sentences. The students came from low-middle income households. Three of the students were African American, one student was bi-racial, and one student was Caucasian. These five students were selected to participate in this study because they consistently arrived at school at least twenty minutes before the rest of the students, and the teacher wanted to use this time productively to increase her students’ academic skills. Table 2.1 shows demographic and school related information for each student.
<table>
<thead>
<tr>
<th>Student</th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Reading Assessment Score/Level</th>
<th>Writing Assessment Score/Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>M</td>
<td>7</td>
<td>Bi-racial</td>
<td>Standard Progress Monitor Passage (CBM-Gr. 3) 192 WRC/90-100th percentile Spring</td>
<td>Written Expression-Correct Writing Sequence Probe (CBM-Gr. 2) 21 CWS/50-75th percentile Spring</td>
</tr>
<tr>
<td>JS</td>
<td>F</td>
<td>7</td>
<td>African Am.</td>
<td>Standard Progress Monitor Passage (CBM-Gr. 3) 115 WRC/25-50th percentile Spring</td>
<td>Written Expression-Correct Writing Sequence Probe (CBM-Gr. 2) 55 CWS/90-100th percentile Spring</td>
</tr>
<tr>
<td>RG</td>
<td>F</td>
<td>7</td>
<td>Bi-racial</td>
<td>Standard Progress Monitor Passage (CBM-Gr. 3) 130 WRC/50-75th percentile Spring</td>
<td>Written Expression-Correct Writing Sequence Probe (CBM-Gr. 2) 40 CWS/90-100th percentile Spring</td>
</tr>
<tr>
<td>DD</td>
<td>M</td>
<td>7</td>
<td>African Am.</td>
<td>Standard Progress Monitor Passage (CBM-Gr. 3) 116 WRC/25-50th percentile Spring</td>
<td>Written Expression-Correct Writing Sequence Probe (CBM-Gr. 2) 11CWS/25th percentile Spring</td>
</tr>
<tr>
<td>ZC</td>
<td>M</td>
<td>7</td>
<td>Caucasian</td>
<td>Standard Progress Monitor Passage (CBM-Gr. 3) 125 WRC/50-75th percentile Spring</td>
<td>Written Expression-Correct Writing Sequence Probe (CBM-Gr. 2) 24CWS/50-75th percentile Spring</td>
</tr>
</tbody>
</table>
Setting

This study took place in a second grade general education classroom in an urban charter school serving approximately 500 children, kindergarten through seventh grade. The classroom was composed of one teacher and 25 students. The teacher was present for all experimental sessions and data collection occurred each morning between 8:50 and 9:05.

Definition and Measurement of Dependent variables

Three dependent variables were examined in this study (a) the number of self-generated words listed during a 2-min period prior to writing a story (SGW), (b) the total number of words written during a 5-min period in the story (TWW), and (c) number of self-generated words used in a story (SGWS).

**Number of Self-generated Words (SGW).**

The number of self-generated words is the total number of category words written in two minutes in response to a teacher prompt. The prompts were as follows: “Make a list of __ (e.g., animal) __ words. Write down as many words as you can.” Examples of word categories for these prompts include clothing, colors, toys, nature, food, or holidays. See Appendix A for the list of all the SGW prompts used in this experiment. The students were provided with a worksheet with the SGW writing prompt printed at the top of the page with lines for writing their responses printed below. The teacher read the prompt to the students, said “Begin”, and timed the students for 2-min. Only words that corresponded to the specified category were counted as SGW. For example, under the category of “winter clothes,” responses that would be counted included hats, gloves,
boots, coats, and scarves. Responses such as bathing suits, cats, or watermelon would not count because they do not accurately correspond to the category of “winter clothes.” A word did not have to be spelled correctly to be counted.

Total Words Written.

Total words written (TWW) was defined as the total number of words written during a 5-min timed writing period in response to a story starter. A word was defined as “any series of letters separated from another series of letters by a space” (Espin et al. 2000, p. 144). A word did not have to be spelled correctly to be counted in the TWW score.

Number of self-generated words used in story (SGWS)

After the students generated category words for two minutes, the teacher prompted the students to write a story and to use as many of their self-generated words as possible. The students were provided with a worksheet on which they wrote their stories (see Appendix B), and they were timed for five minutes. At the end of the 5-min timing the teacher collected the worksheets. One SGWS was scored each time a word from the self-generated word list also appeared in the story. If the self-generated word occurred more than once in the story, it was only counted as one SGWS.

Materials

Writing prompt. Students were given a writing prompt worksheet (see Appendix B) at the beginning of the session as a guide the writing of their self-generated words and stories. The writing prompt worksheet was used during each session as a template for students to write on. In addition to the written prompts, the worksheet included a place
for the student’s name, the date, a place to write self-generated words, and a place to write stories.

**Writing folder.** Each student used a writing folder which contained the writing prompt worksheets and the self-graphing chart. This folder helped to keep each student’s writing samples and materials organized.

**Graphing sheet.** Students each had their own graphs to self-record SGW and TWW. The graph displayed data by session on the horizontal axis and the number of possible words written on the vertical axis. After each session, the student graphed the number of SGW and TWW by shading in the corresponding squares (bar graph). See Appendix C.

**Data sheet.** The experimenter used a data sheet to record SGW, TWW, and SGWS for each student (see Appendix D).

**Digital stopwatch.** The experimenter used a digital stopwatch to time students during each session for 2 minutes during the SGW portion and for 5 minutes during the story writing portion.

**Experimental Design**

A multiple baseline across skills with an embedded reversal design was used in this experiment. The multiple baseline design had two tiers. The first tier was the dependent variable of self-generated words (SGW) and the second tier was total words written (TWW). Baseline data were collected on SGW and TWW until the pattern of responding was somewhat stable. The experimenter then introduced the self-graphing intervention only for SGW and continued collecting baseline data on TWW. When the
data were stable, the teacher introduced the condition in which the students self-graphed both SGW and TWW.

Then self-graphing plus indiscriminable contingencies condition was introduced. The students continued to self-graph SGW and TWW, but an unpredictable reinforcement procedure (i.e., an indiscriminable contingency) was in place for both tiers. The indiscriminable contingency was withdrawn and then re-introduced in an attempt to demonstrate a functional relationship of indiscriminable contingencies on production of written words. Additionally, data were collected on the number of self-generated words used in the story (SGWS) throughout the duration of the experiment to determine the extent to which there was any co-variation of the experimental conditions on the number of SWGS.

The following is a description of each experimental condition: baseline, self-graphing, and self-graphing plus indiscriminable contingencies.

**Baseline**

The experimenter passed out the writing prompt worksheet and writing folder to each of the five students. The experimenter read the writing prompt to the students and asked them to make a list of as many words as they could think of pertaining to a specific category (e.g., “Write down as many camping words as you can.”). The experimenter told the students that they had 2 minutes to complete this part of the worksheet. At the end of 2 minutes, the experimenter asked the students to put their pencils down and read the story starter with her (e.g., “One day, I went sledding with my friends and…”). The experimenter then told the students that they have 5 minutes to write their story and to
use as many words as they could from the list they just wrote. At the end of 5 minutes the experimenter told the students to put their pencils down and place the worksheet in their folders. The experimenter collected the folders and assessed the student worksheets for number of self-generated (SGW), total words written (TWW) in the story, and number of self-generated words used in the story (SGWS).

Self-Graphing Conditions

**Self-graphing of Self-generated Words (SGW).** The experimenter gave the students their folders containing their writing prompts and instructions to write as many words as they could think of in 2-minutes pertaining to the topic. After the students generated words for two minutes, they were prompted to write their stories. At the end of five minutes, the experimenter told the students to count the number of self-generated words they wrote and record that number on the graph taped to their folders.

During the first self-graphing session, the experimenter explained how and why the graph was used, modeled using the graph, assisted each student with their individual graphs, and provided students with practice graphing on their own data. During this training session, the teacher provided the students with examples of their previous stories and had them count and self-graph the number of self-generated words.

**Self-graphing of SGW and TWW.** The procedures for this condition were the same as those used in the Self-graphing of SGW except that at the end of the writing period the students self-graphed both SGW and TWW on their graphs.

**Self graphing plus indiscriminable contingencies.** The procedures for this condition were the same as the previous self-graphing conditions except that the teacher
introduced a mystery word. After the students completed their writing and self-graphing, the teacher told the students the mystery word for the day. If the students wrote that same word in the self-generated word list or the story, he or she earned a point. If the student wrote the mystery word in both places, he or she earned two points. The points were recorded using small stickers placed in a box on the student’s point card (see Appendix E). A small tangible reward (e.g., sticker or candy) was given for every 5 points earned.

**Interobserver Agreement**

The experimenter made copies of 20% of the work samples across all experimental conditions and a second observer scored them for SGW, TWW, and SGWS. IOA was determined by calculating the number of agreements divided by the number of agreements plus disagreements multiplying by 100 (Total Agreements/Agreements + Disagreements x 100). IOA data per participant are presented in table 3.1.

**Procedural Reliability**

The experimenter used a procedural reliability checklist (see Appendix F) for each of the following conditions: baseline, self-graphing of self-generated words, self-graphing of self-generated words and total words written, and self-graphing plus indiscriminable contingencies. The second observer used this sheet to check off each procedure as it was completed. During 15% of sessions, the observer assessed implementation of the intervention and checked off whether or not steps were implemented correctly. Procedural reliability was calculated by dividing the number of correctly executed procedural steps by the total number of steps and multiplying by 100.
CHAPTER 3

RESULTS

This chapter presents the results for interobserver agreement (IOA), procedural reliability, and the dependent variables of self-generated words (SGW), total words written (TWW), and number of self-generated words used in the story (SGWS) for each student.

Interobserver Agreement

Table 3.1 shows mean IOA for each student in each condition. During Baseline, the mean IOA was 100% for all students. During all self-graphing phases/conditions, IOA ranged from 73% to 100%. The mean IOA was 81.9%. During both the Self-graphing and Indiscriminable contingency phases, the mean IOA was 89%.

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline</th>
<th>SG (all self-graphing phases/conditions)</th>
<th>SG + IC (both phases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>100%</td>
<td>93.3%</td>
<td>93.3%</td>
</tr>
<tr>
<td>DD</td>
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<td>76.9%</td>
<td>83.3%</td>
</tr>
<tr>
<td>ZC</td>
<td>100%</td>
<td>80%</td>
<td>83%</td>
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<tr>
<td>RG</td>
<td>100%</td>
<td>86.7%</td>
<td>92.3%</td>
</tr>
<tr>
<td>JS</td>
<td>100%</td>
<td>73%</td>
<td>93.3%</td>
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</table>

Table 3.1. Mean IOA for each student.
**Procedural Reliability.**

Procedural reliability ranged from 99.6% to 100% across experimental conditions. During baseline, the average reliability percentage was 100%. During the intervention sessions the average reliability percentage was 99.6 percent. During one session, the folders were not collected immediately following the session.

**Data for AS**

*SGW.* Figure 4.1 shows the data for AS. For SGW, AS showed stable baseline responding, with the number of SGW ranging from zero to 12. During the self-graphing conditions, responding started to gradually increase into the self-graphing of SGW and TWW. Responding was no different in the SG + IC phase than in the Self-graphing of SGW. In the Self-graphing of SGW and TWW phase, there was a stable downward trend. There was a clear upward trend in the final SG+ IC phase.

*TWW.* During baseline, responding was high and variable. There was a slight upward trend in the Self-graphing phases, however, still highly variable. Responding decreased slightly in the SG+IC phase. Responding continued to decrease slightly into the SG of SGW and TWW. The final SG+ IC phase showed a spike and overlap with the SG of SGW and TWW.

*SWGS* Responding was consistent in baseline through the SG phases. In the SG of SGW and TWW phase there was a downward trend. Responding spikes in the final SG+IC phase. AS scored a 0 in 5 sessions during the last 2 phases.
Figure 4.1. Number of self-generated words (SGW), total words written (TWW), and self-generated words used in story (SGWS) by AS
Figure 4.1 continued
Data for DD

SGW. Figure 4.2 shows the data for DD. In baseline, responding was low and stable. During SG of SGW there was some overlap and a slight upward trend, responding was consistent through the next phase. In the SG +IC phase, there was a slight increase initially and then a clear downward trend took place through the SG of SGW and TWW. There was only one point in the final SG +IC phase, which was spiked.

TWW. In baseline, there was high variability ranging between 5 and 50. In the SG of SGW and SGW, TWW phases, there continues to be high variability. In the SG +IC phase, responding was less variable and more stable. In SG of SGW and TWW, responding was highly variable once again ranging between 2 and 60. There was one point in the final SG+IC phase, which was high (60).

SWGS. In baseline, responding was variable, ranging between 0 and 12. In the SG phases, responding was similar to baseline. In the SG +IC phase, there was variability but an overall improvement. There was a downward trend in the SG of SGW and TWW. There was one point in the final phase, SG +IC, which was spiked.
Figure 4.2. Number of self-generated words (SGW), total words written (TWW), and self-generated words used in story (SGWS) by DD.
Figure 4.2 continued
Data for ZC

SGW. Figure 4.3 shows the data for ZC. Responding stays fairly consistent from baseline through the SG +IC phase, with points ranging between 0 and 10. There was a slight downward trend in the SG of SGW and TWW phase. In the final phase, there was upward trend.

TWW. In baseline, responding was stable, ranging between 15 and 30. There was an upward trend in the SG phases, followed by a downward trend in the SG +IC phase. Responding increases in the SG of SGW and TWW phase and continues to stay high but variable in the last, SG +IC phase.

SWGS. Responding was fairly consistent from baseline through the SG phases, ranging between 0 and 10. There is a slight downward trend during the SG +IC continuing into the SG of SGW and TWW phase. In the final phase, there is a clear increase in responding.
Figure 4.3. Number of self-generated words (SGW), total words written (TWW), and self-generated words used in story (SGWS) by ZC
Figure 4.3 continued
Data for RG

SGW. Figure 4.4 shows the data for RG. In baseline, responding was low and stable. The beginning of the SG of SGW phase, it was the same as baseline and then there was a significant increase at the end. In the SG of SGW and TWW phase, there was an upward trend, followed by a decrease in the SG +IC phase, which was low and stable. The SG of SGW and TWW show low and stable responding and a slight increase in the final SG +IC phase. There was some overlapping data.

TWW. In baseline, the data are high and variable, ranging from 20 to 90. There was an immediate decrease in the SG phases. At the beginning of the SG +IC phase, there was an immediate decrease, followed by an upward trend. In the SG of SGW and TWW phase, there was an initial downward trend and then increase at the end. In the final SG +IC phase, responding was variable with an overall improvement, but similar to baseline.

SWGS. In baseline, the data are low and stable, ranging between 0 and 7. In the SG phases, there was a similar pattern to baseline. In the SG +IC phase, there was an upward trend, followed by a downward trend in the SG of SGW and TWW phase. In the final SG +IC phase, there was a significant upward trend.
Figure 4.4. Number of self-generated words (SGW), total words written (TWW), and self-generated words used in story (SGWS) by RG
Figure 4.4 continued

Sessions
Data for JS

SGW. In baseline, the data was low and stable, ranging from 0 to 12. In the SG phases, there was a slight upward trend. In the SG +IC phase, data was stable but better than the previous phases. In the SG of SGW and TWW, there was a downward trend, followed by an increase in the final SG +IC phase.

TWW. In baseline, the data was high and variable with a slight decrease. During the SG phases, responding continued to slightly decrease and then increase at the end. In the SG +IC phase, data was stable and higher than the previous phases. There was a downward trend in the SG of SGW and TWW phase. In the final, SG + IC phase, there was a clear difference in responding, much higher.

SWGS. In baseline, the data was variable, ranging from 0 to 10. There was an upward trend in the SG phases. Data was maintained through the SG +IC phase. There was a significant downward trend in the SG of SGW and TWW. There was an immediate increase in the final SG +IC phase.
Figure 4.5. Number of self-generated words (SGW), total words written (TWW), and self-generated words used in story (SGWS) by JS.
Figure 4.5 continued
Students were given a survey with questions regarding how much they liked the task (see Appendix G). The survey consisted of seven statements or scenarios regarding student interest in the task. The students were asked to rate each on a scale of 1-10, with 10 being the highest rating (highly enthusiastic) and 1 being the lowest rating (never want to do it). AS said he “liked doing the secret writing club but became board towards the end” of the study. He said he would enjoy doing it again in the future and liked the idea of being selected to participate. He scored making a list of SGW and finishing story starters as a 6. He stated that sometimes it was difficult to come up with words. He scored receiving rewards as a 10. AS gave the intervention/study an average score of 7.

DD scored all areas of the intervention as a 10, with the exception of starting work before classmates, which he scored a 9. He said he “did not really like having to do work before everyone else.” He spoke highly of receiving rewards for good work and would like to do it again in the future.

ZC scored starting work before his classmates as a 10, stating that “it was a good warm-up for the day.” He scored making a list of SGW and finishing story starters as a 7. He said he “had trouble thinking of words”. He ranked being timed as an 8. ZC gave the intervention/study an average score of 9.

RG scored all areas of the study as a 10. She spoke very highly of it, saying that “she felt lucky that her teacher picked her.” She also feels like her writing skills got better. She said, however, that she “wishes they could have earned rewards every time.
JS scored all areas of the intervention as a 10. She said she “liked making graphs and trying to beat her best scores.” There were no areas of the study that she had negative feelings about and would like to participate in a study like this again in the future.
CHAPTER 5

DISCUSSION

This chapter will present a discussion of the research questions, limitations, directions for future research, and implications for practitioners.

Research Question #1. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by self-generated words (SGW)?

Overall, for the dependent variable of SGW, students’ emitted variable responding with no clear differences in the first 3 phases. During the last three phases, SGW responding showed some changes that seemed related to self-graphing with and without indiscriminable contingencies. Specifically, when the indiscriminable contingency was removed in phase 5, the number of SGW decreased slightly for all 5 students and then increased again when the indiscriminable contingency was reintroduced in phase 6. Students ranged between 0 and 37 in the SGW phase alone. In the final SG plus IC phase, all students showed a clear upward trend. Despite these slight differences in responding, there is too much overlap of data to conclude that a functional relationship exists for this variable.
AS seems to show a change between the SG condition alone and the SG + IC condition. AS shows a similar pattern to DD during the first SG and IC phase and the last SG of SGW and TWW phase.

Responding increased slightly at the beginning of the SG plus IC phase, then became more variable for DD. DD showed a clear downward trend during the final SG of SGW and TWW phase. Responding immediately increased more significantly during the final SG plus IC phase. The pattern of responding during baseline through the end of the study was very similar to that of ZC.

Responding decreased at the beginning of the SG plus IC phase and slowly increased towards the end for ZC. He showed a steady downward trend when the IC is removed and he engaged in SG of SGW and TWW. Responding immediately increased and stayed higher during the final SG plus IC phase. ZC shows a very similar pattern of responding during the final SG plus IC phase to that of RG, with a down, up, down, up trend, showing an increase in responding.

Responding immediately increased at the beginning of the SG plus IC phase and showed an up, down, up, down pattern for RG. During the SG of SGW and TWW phase, data showed a downward trend. There was a slight, yet steady increase in responding in the final SG plus IC phase. RG’s pattern of responding in the final SG plus IC phase was similar to that of JS, showing a down, up, down, up pattern, with an overall increase.

Responding immediately increased in the final SG plus IC Phase for JS. JS seemed to show a possible functional relation between SG alone and SG plus IC.
To summarize, all participants seemed to respond much lower on the 28\textsuperscript{th} session, showed an increase in responding during the final SG plus IC phase, and a decrease in responding when the IC was removed.

\textit{Research Question #2. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by total words written (TWW)?}

Overall, students’ responding ranged between 3 and 68 total words written. Responding was highly variable among all students in the first 3 phases of TWW alone. A clear change in responding was evident in the final three phases all students. Four of the five students decreased their TWW when the indiscriminable contingency was removed in phase 5 and increased their TWW when the indiscriminable contingency was reintroduced in the final SG plus IC phase.

In the final SG plus IC phase for AS, there was an immediate increase in responding that remained consistently high. There may be evidence of a functional relation in the final 2 phases for AS. His pattern of responding was similar to that of DD, highly variable yet showing a possible functional relation in the final 3 phases.

Responding was highly variable showing an overall increase for DD. In the first SG plus IC phase, responding was more stable and remained higher overall. In the second SG phase responding was highly variable ranging between 2 and 60. In the final SG plus IC phase, responding was high. Since there was only one data point in the final phase, there is not enough evidence to determine if a functional relationship exists. DD’s pattern
of responding in the first SG phase was similar to that of ZC, showing a steady increase at first, responding high and then decreasing immediately at the end of the phase.

Responding was variable yet showing an upward trend for ZC. Responding decreased in the first SG plus IC phase. In the second SG phase, data steadily increased and was variable in the final SG plus IC phase, showing an overall slight downward trend. For ZC, a possible functional relationship exists between SG alone and SG plus IC. Data shows that SGW alone may be more rewarding for ZC than SG plus IC in TWW. ZC’s pattern of responding in the first SG phase was similar to that of RG, starting low, steadily increasing, and dropping again at the end of this phase. In the final SG plus IC phase responding was highly variable and there was an overall improvement for RG. This data shows a possible functional relation between SG alone and SG plus IC for TWW. RG’s pattern of responding in the final SG plus IC phase was the opposite to that of JS, showing an up, down, up, down pattern. There was a clear increase in responding in the final SG plus IC phase for JS. JS’s data may show evidence of a functional relation between SG alone and SG plus IC. Overall, all students, with the exception of ZC, show a similar pattern of responding.

Research Question #3. What are the effects of self-graphing and self-graphing plus indiscriminable contingencies on second graders writing proficiency as measured by self-generated words in story (SGWS)?

Overall, students’ responding ranged between 0 and 17. Responding was variable among students in the SGWS phase alone and did not show a functional relation between
baseline and SG of SGW and SG of SGW and TWW. In the final three phases of SGWS, there was evidence of a possible relationship across all students.

Responding was variable yet showing an overall upward trend for AS. During the first SG plus IC phase, there was a steady increase that slowly decreased towards the end of the phase. There was a clear downward trend during the second SG phase. In the final SG plus IC phase there is an immediate significant increase in responding. There seems to be a functional relation among the final three phases for SGWS. AS’s pattern of responding was similar to that of DD in the final three phases, showing variability, a downward trend and finally and immediate increase.

Responding was low and slightly variable for DD. There was an overall improvement in the first SG plus IC phase, yet high variability. There was a clear downward trend in the second SG phase and an immediate increase in the final SG plus IC phase. There was evidence of a functional relation. DD’s pattern of responding in the last 2 phases was similar to that of ZC, showing and downward trend in the SG phase and an immediate increase in the final SG plus IC phase.

Responding was slightly variable yet fairly steady for ZC. There was a downward trend in the first SG plus IC phase. In the second SG phase responding started a bit higher then steadily decreased. In the final SG plus IC phase, there was a clear and immediate increase, followed by a decrease, still remaining higher than the previous phase. There may be evidence of a functional relation among the final 3 phases. ZC’s pattern of responding is similar to that of RG in the final 2 phases.
There was a clear and immediate upward trend in the final SG plus IC phase for RG. There may be evidence of a functional relation in the final 4 phases. RG’s pattern of responding is similar to that of JS overall. There was a clear downward trend during the second SG phase for JS. In the final SG plus IC phase there was a clear and immediate increase in responding followed by a decrease which remained higher than previous phases, overall. There may be evidence of a clear functional relation between SG alone and SG plus TWW overall for SGWS. Overall, there is a similar pattern of responding among all 5 students for SGWS.

*Research Question 4: What are the opinions of students of the interventions and outcomes used in this study?*

Overall, students gave the intervention/study an average score of 9.2. Students had mainly positive comments regarding the study. Two students mentioned that they enjoyed receiving rewards for their writing, while one mentioned that she wished they could have had the opportunity to earn rewards every time. One student mentioned that she liked making graphs to view progress while another felt lucky to have been picked to participate in the intervention. There were only a couple negative comments regarding the study. One student did not enjoy having an assignment before his classmates arrived, while another said that he had trouble generating words to write. All in all, students enjoyed this study and said they would like to participate in one again in the future.

*Limitations*

There are several limitations to this study. The degree of background knowledge on daily writing topics was variable for each student. Students probably produced more
writing when they had more knowledge and interest in the topic. This is considered a limitation because if the student has little background information on a topic, he or she would not be able to generate related words and therefore have a low number of total words.

This study was done in the morning during student arrival and breakfast. There were several distractions taking place throughout the classroom during this time which may have produced some variability of responding. Students may still have been sleepy since the study began before 9 a.m. (prior to the start of the school day). Distractions are considered a limitation because if a student is focused on his or her surroundings or unfocused due to sleepiness, he or she would not be able to focus on writing and therefore not be generating as many words as if the distractions were eliminated.

Motivation may have been dwindling because of the approaching the end of school year. This is considered a limitation because if there is a lack of motivation to complete a task or do well, students may not feel the need to put forth their best effort and therefore the lack of writing would be a reflection.

Students only wrote for 5-minutes so it is unknown if the results of this study would extend to longer writing assignments. Additionally, there may have been a ceiling effect because all of the students were high functioning and wrote for only 5-minutes. If students wrote for longer periods of time, the data may have shown more distinct differences in each of the experimental conditions.

The purpose of the study was to assess writing production by counting the number of words written. An important limitation is that writing quality was not assessed. It is
possible that the experimental conditions also affected writing quality, however based on the type of data collected, this determination could not be made.

IOA was high during baseline at 100% because students gave clear one-word responses on each line of the SGW. It was easy to read and record for both observers. As students became familiar with the procedures and writing was increasing, several students were writing two-word phrases as a response on a single line in the SGW. The experimenter counted each two-word phrase as one response, while the second observer counted these as two responses. This is where the discrepancy in the self-graphing condition lies (73% IOA). Since IOA in the self-graphing condition was low, data may less accurately reflect student performance.

*Future Directions*

This study was done with high achieving second graders. Future research should examine the effects of self-graphing and indiscriminable contingencies on students with disabilities, student who are at risk for failure, and students with low motivation. Additionally, it would be interesting to see the effects of implementing self-graphing with whole class as opposed to a small group. Different ways to implement the indiscriminable contingency should be explored. Students could draw a pre-made note card from a hat with the mystery word or number on it. Another student not involved in the study could pick the mystery word/number and report it to the writing club. Providing choices, such as letting the students generate all of the writing prompts and story starters before the study begins, may increase interest in the writing topic. Teachers could change the color of the writing prompt paper each day to increase interest. Teachers may also incorporate
different formats of self-graphing, such as a pie graph or line graph, and teach students how to recognize and make each. Teachers could also have students graph results on the computer and send results home daily/weekly for parent encouragement and praise. Having students collaborate and generate ideas before writing begins could also be a direction for future research. Teachers could publicly post each student’s results so that their peers may view and praise progress or provide encouragement. Teachers could make a group goal (whole class or teams) for the students to work towards each day. When the goal is met, the previously determined group contingency reward can be earned. Incorporating teamwork/goals into this study may also increase motivation, student interest, and student achievement.

**Implications for Practice**

In order for practitioners to implement self-graphing with written expression, teachers may want to choose a different time of day to execute the intervention, such as after lunch or recess. Students may be more able to focus and write more content if they have just eaten. This would eliminate the distraction of feeling hungry or having students thinking about what they will eat instead of the task at hand. Teachers may want to give students more time to write. This would allow students to generate more ideas/words related the topic and therefore increase overall productivity. Incorporating different types of graphs for students to graph results, such as a pie graph or line graph, may be a fun way to incorporate other skills into the study as well as providing variety and interest. Teachers may want to call the pie graph a pizza graph, and when filled, students may earn a pizza party. Teachers could also lead a discussion of the selected topic before the
writing task begins in order to get ideas flowing and to gage the range of background knowledge of the topic across students. This may help the teacher to judge whether the results were based on amount of background knowledge or focus and effort made.

Teachers must provide a lot of enthusiasm for the task at hand. Giving students a “pep talk” before they begin is a good idea to raise motivation and focus. Give lots of praise for direction-following and meeting personal and group goals. Praise students for graphing correctly, coming to group with a positive attitude, and working hard the whole time. Make the study exciting by providing special “writing club pencils” that students only use during that time. Put forth high expectations and make them very clear each day, before beginning the intervention. Providing students with choices as to which prompt and story starter to pick is important. Weekly feedback to parents, sending home graphs, and having students graph results at home as well are all implications for practitioners.
References


APPENDIX A

Writing Prompt #

Name: _____________________
Date: ______________________

Word Prompt:
Make a list of ____________ words. Write down as many words as you can.

________________ ________________ ________________ ________________
________________ ________________ ________________ ________________
________________ ________________ ________________ ________________
________________ ________________ ________________ ________________

Total Words: ______

Story Writing:

Prompt: ____________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

Total Words: _____
Appendix B- Self-generated Word Prompt List

1. Feelings/Emotions
2. Camping
3. Play activities
4. Food
5. Travel
6. Solar System
7. Animals
8. Verbs
9. Sports
10. School
11. Adjectives
12. Nature
13. Ocean
14. Seasons
15. Monsters
Appendix C- Graphing Sheet

Name: ______________________

<table>
<thead>
<tr>
<th>Session</th>
<th>1- SGW</th>
<th>1- TWW</th>
<th>2- SGW</th>
<th>2- TWW</th>
<th>3- SGW</th>
<th>3- TWW</th>
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Appendix E- Social Validity Survey

Name: __________________   Date: ____________________

On a scale of 1-10, 10 meaning you highly enjoyed the task and 1 meaning you never want to do it again, rate the following below:

1. Being a part of the “Secret Writing Club”. ______
2. Starting a writing task before my other classmates arrive at school. ______
3. Being timed to see how many words and sentences I can write in 7 minutes. ______
4. Writing a list of words. ______
5. Finishing story starters and writing a story. ______
6. Self-Graphing my results. ______
7. Earning rewards for doing well. ______
The experimenter passes out the writing prompt worksheet and a writing folder to each student.

The experimenter says, “Students, please read the word prompt at the top of your paper with me, ‘Write as many ______ words as you can. You will have two minutes.’

The experimenter starts the timer that is pre-set for two minutes and says, “Go.”

At the end of 2 minutes, the experimenter says, “Stop writing.”

The experimenter says “Now, you now have 5 minutes to write a story on the lines. Please use as many words from your list as you can. Ready. Go.”

At the end of 5 minutes, the experimenter tells the students to put their pencils down and place their stories in their folders

The experimenter collects the folders.
Procedural Checklist for Self Graphing of Self-generated Words (SGW)

| + – | The experimenter passes out the writing prompt paper and a writing folder to each student. |
| + – | The experimenter says, “Students, please read the word prompt at the top of your paper with me, ‘Write as many ______ words as you can. You will have two minutes.’” |
| + – | The experimenter starts the timer that is pre-set for two minutes and says, “Go.” |
| + – | At the end of 2 minutes, the experimenter says, “Stop writing.” |
| + – | The experimenter says “Now, you now have 5 minutes to write a story on the lines. Please use as many words from your list as you can. Ready. Go.” |
| + – | At the end of 5 minutes, the experimenter says, “Stop writing.” |
| + – | The experimenter says, “Now, count the number of words you listed at the top of the page and write that number in the box.” |
| + – | The experimenter says, “Now open your folder and put that number on your graph.” The experimenter provides assistance if needed. |
| + – | The experimenter collects the folders. |
**Procedural Checklist for Self-graphing of SGW plus TWW**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
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<tbody>
<tr>
<td>+ –</td>
<td>The experimenter passes out the writing prompt paper and a writing folder to each student.</td>
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<tr>
<td>+ –</td>
<td>The experimenter says, “Students, please read the word prompt at the top of your paper with me, ‘Write as many ______ words as you can. You will have two minutes.’”</td>
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<td>+ –</td>
<td>The experimenter starts the timer that is pre-set for two minutes and says, “Go.”</td>
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<tr>
<td>+ –</td>
<td>At the end of 2 minutes, the experimenter says, “Stop writing.”</td>
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<tr>
<td>+ –</td>
<td>The experimenter says “Now, you now have 5 minutes to write a story on the lines. Please use as many words from your list as you can. Ready. Go.”</td>
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<tr>
<td>+ –</td>
<td>At the end of 5 minutes, the experimenter says, “Stop writing.”</td>
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<tr>
<td>+ –</td>
<td>The experimenter says, “Now, count the number of words you listed at the top of the page and write that number in the box below your word list.”</td>
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<tr>
<td>+ –</td>
<td>The experimenter says “Then count the number of words you wrote in the story and write that number in the box below your story.”</td>
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<td>+ –</td>
<td>The experimenter says, “Now open your folder and graph the numbers you wrote in the boxes. The experimenter provides assistance if needed.</td>
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<td>+ –</td>
<td>The experimenter collects the folders.</td>
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CONSENT FOR PARTICIPATION IN RESEARCH

I consent to my child's participation in research entitled: The Effects of Self-Graphing on the Writing Productivity of Second Graders.

Dr. Sheila Morgan, Principal Investigator, or her authorized representative, Lynn Heward, has explained the purpose of the study, the procedures to be followed, and the expected duration of my child’s participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me or my child.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.
Date: ___________________________  Signed: ___________________________

(Participant)

Signed: ________________________________________________

(Principal Investigator or his/her authorized representative)

Signed: ________________________________________________

(Person authorized to consent for participant, if required)

Witness: ________________________________________________

January 15, 2009
Dear Parents:

My name is Dr. Sheila Morgan. I am a member of the special education faculty at The Ohio State University. You child’s teacher, Ms. Lynn Heward, and I are working together to do a study. This study is being done to find out if self-graphing will increase the writing productivity of second graders. Each morning as the students arrive to the classroom, they will be provided with a prompt to write a story. The writing prompt directs the students to self-generate story words (e.g., “Write down as many animal words as you can.”) and provides a story starter (e.g., “The craziest thing happened on the day I went to the zoo…”). Students will have 2 minutes to create a list of self-generated words and 5 minutes to write a story. At the end of the brief writing period each day, the students will count the number of words they wrote and record that number on a simple graph.

Ms. Heward plans to implement this instruction for all of the students as part of their normal educational activities. However, we would like your permission to examine and report your child’s results anonymously. We would like your permission to examine your child’s written expression and anonymously report the results. Your child’s identity will not be revealed in any report, and confidentiality will be maintained by using pseudonyms on all reports and data collection forms. We expect this study to continue for about 16 to 20 weeks.

Your consent is voluntary. If you allow your child to participate in the study, you may
discontinue his or her participation at any time without penalty or loss of benefits. Please contact me at 614-247-8714 if you have any questions.

Sincerely,

Sheila Morgan

Associate Professor
Dear Dr. Morgan,

The Office of Responsible Research Practices has determined the above referenced protocol exempt from IRB review.

Date of Exempt Determination: 12/15/2008

Qualifying Exemption Category: 1

Please note the following:

• Only OSU employees and students who have completed CITI training and are named on the signature page of the application are approved as OSU Investigators in conducting this study.
• No procedural changes may be made in exempt research (e.g., recruitment procedures, advertisements, instruments, enrollment numbers, etc.).
• Per university requirements, all research-related records (including signed consent forms) must be retained and available for audit for a period of at least three years after the research has ended.
• It is the responsibility of the Investigator to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University’s OHRP Federalwide Assurance #00006378. All forms and procedures can be found on the ORRP website – www.orrp.osu.edu. Please feel free to contact the ORRP staff contact listed above with any questions or concerns.

Cheri Pettey, MA, Certified IRB Professional
Senior Protocol Analyst—Exempt Research
Office of Responsible Research Practices
300 Research Foundation
1960 Kenny Road
Columbus, OH 43210-1063
Phone (614) 688-8457
Fax (614) 688-0366
www.orrp.osu.edu
Name: Andy

Writing Prompt # 4

Word Prompt:

Make a list of food words. Write down as many words as you can.

- pizza
- spaghetti
- lasagna
- noodles
- chicken
- vegetables
- baked chicken
- mashed potatoes
- __________________
- __________________
- __________________
- __________________
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Total Words: 10

Story Writing:

Prompt: Yesterday, the children went for a picnic and... they went and pack the food and went with sun visor. After they played for a while, they went for another thing. They went to the beach and had a picnic. They played in the water and they had some fun. Then they went home and...
Name: Andy
Date: 4/23/09

Word Prompt:
Make a list of Great Western words. Write down as many words as you can.

<table>
<thead>
<tr>
<th>School</th>
<th>Student</th>
<th>Teachers</th>
<th>desk</th>
</tr>
</thead>
<tbody>
<tr>
<td>learn</td>
<td>Mrs. Dunn</td>
<td>Ms. Heards</td>
<td>Ms. Dowood</td>
</tr>
<tr>
<td>base</td>
<td>Zach</td>
<td>Carson</td>
<td>Penn</td>
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<tr>
<td>archean</td>
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</tbody>
</table>

Total Words: 12

Story Writing:
Prompt: The things I like about my school are:

That it is better than regular school. My mom likes it because she thinks that they have great academics. In the classroom, she also likes the teacher, there is one my teacher thinks is really good. My friend there is Kirk Carson, he is in my class. He is my best friend. The teachers are Mr. Dowood, Mr. Penn, and Carson. These are my best friends. My favorite teachers are Mr. Dowood.

Total Words: 156
Word Prompt:
Make a list of clothing words. Write down as many words as you can.

- Shirt
- Pants
- Socks
- Underwear

Total Words: 6

Story Writing:
Prompt: On Saturday, I am going shopping with my mom and...

- My wrestling shirt

Total Words: 19
Danny

Writing Prompt # 42

Date: 4/23/09

Word Prompt:

Make a list of Great Western words. Write down as many words as you can.

students teacher boss rest room
building learning writing mail
projects boat book bag listening

total Words: 13

Story Writing:

Prompt: The things I like about my school are:

First of all, the most spelling is important andloose
way is to help out. Reading is important and vocabula and
social but learning isn't. But the only person who
cares is going to learn. I'm not sure why I want to care
because I missed school day and my guess can you imagine
respecting thing is everybody.

total Words: 59
Jasmine

Writing Prompt # 5

Word Prompt:

Make a list of travel words. Write down as many words as you can.

- suitcase
- jet
- airplane
- food
- car
- tray
- lily
- bed

Total Words: 7

Story Writing:

Prompt: As the jet flew over the mountains...

The jet was going really fast. I had a lot of stuff in my suitcase, it was really heavy. I had food in because I was hungry. I ate lots of food on a tray.

We couldn't ride in a car because it would take us lots of time.

Total Words: 49
Jasmine

Name: 

Word Prompt:  

Writing Prompt # 42  

Date: 4/23/09

Make a list of Great Western words. Write down as many words as you can.

- yellow
- black
- imagine
- school
- student
- uniform
- dress
- nice
- it is great
dish
- good
- favorite
- teachers
- principal

Total Words: 13

Story Writing:

Prompt: The things I like about my school are:

- that it is nice
- girls and we get to dress in\nclothes. Our clothes are yellow and black.
- My school is an imaging school and a
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Rhonda

Writing Prompt # 4

Word Prompt:
Make a list of __________ words. Write down as many words as you can.

- pie
- pizza
- salad
- soup
- noodles
- sandwich

Total Words: __________

Story Writing:

Prompt: Yesterday, the children went for a _______ and...

[Student's writing:]

The story continued with the children having a grand time and enjoying their meal.

Total Words: __________
Rhonda

Writing Prompt #

Name: 

Word Prompt: 

Make a list of Mother words. Write down as many words as you can.

- works hard
- looks like me
- job
- business
- tall
- play
- brave,
- love

Total Words: 8

Story Writing:

Prompt: I like having a mom because...

I am sick from her. She takes me places fun. She gives me change. She plays with me. She gives me. She always has a job to give me. She is a doctor. She is a nurse. She has a funny name. She loves us very much, and I love her. She is the best mom I could ever had. She

Total Words: 50
Word Prompt:

Make a list of animal words. Write down as many words as you can.

Peach  
Snake  
Spider  
Bears  
Birds  
Hawks  
Eagles

Total Words: 7

Story Writing:

Prompt: Maybe a bear can talk. But that's impossible. Or a snake can talk. But that's impossible.

Total Words: 29
Prompt:
a list of Mother words. Write down as many words as you can.

- kind
- happy
- responsible
- tall
- small
- brown eyes
- black hair

Total Words: 8

Writing:

I like having a mom because...
- She is always nice and loving.
- I love my mom very much.
- I like her.
- She is very kind and very responsible.
- I don't know how she does it.
- She has black hair and brown eyes.

My mom is the best mom in the world.

Total Words: 58