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EFFECTS OF COMIC STRIP-TAUGHT SEQUENCING SKILLS
ON THE WRITING FLUENCY OF A FOURTH-GRADE BOY
WITH A LEARNING DISABILITY IN WRITTEN EXPRESSION

By

Elizabeth Walker Woods

Submitted to the Faculty of the Graduate School
of Longwood College
in partial fulfillment of the requirements
for the degree of
MASTER OF SCIENCE
April, 1994

Effects of Comic Strip-Taught Sequencing Skills
on the Writing Fluency of a Fourth-Grade Boy
With a Learning Disability in Written Expression

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Abstract

The effect that teaching organizational writing skills via the use of comic strips has on the writing skills of a fourth grade boy with a learning disability in written expression was examined to determine the effectiveness. The Written Expression, Level II subtest of the Peabody Individual Achievement Test - Revised was used as the standardized measure. The post-intervention standard score on this measure increased 11 points and raised the percentile rank from 25 to 53. Four additional measures of evaluation were used. These results showed that the use of the comic strip format increased total word production an average of 35.5%, which was significant at the .10 level, the percentage of correctly sequenced words increased an average of 49.4%, which was statistically significant at the .05 level, and correctly sequenced sentences increased by 26.04%, which is significant at the .10 level. The essays were also evaluated for the presence of a topic and summary sentence and both were represented in each post-intervention essay.

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Table of Contents

List of Appendices.....5
List of Tables.....6
List of Figures.....7
Text of Thesis.....
 Introduction.....8
 Literature Review.....12
 Method.....33
 Results.....49
 Discussion.....52
References.....55
Appendix A.....66
Appendix B.....68
Appendix C.....71
Appendix D.....73
Appendix E.....76
Table 1.....80
Table 2.....82
Table 3.....84
Table 4.....86
Figure 1.....88
Figure 2.....90
Figure 3.....92
Biography of Author.....94

List of Appendices

Unit Plan.....Appendix A
Permission Forms.....Appendix B
Topic Choices.....Appendix C
Sample, utilizing the comic strip.....Appendix D
Comic Strips Selected by Subject.....Appendix E

List of Tables

Analysis of pre- and post-intervention
writing samples.....Table 1

Percentage increase in scores from pre-
intervention to post-intervention measures.....Table 2

Coefficients and Levels of Significance.....Table 3

Scores calculated from the PIAT-R.....Table 4

List of Figures

Total Number of Words Written (#Wd).....Figure 1
Percentage of Correct Word Sequences
(% CW Seq.).....Figure 2
Percentage of Correct Sentence Sequences
(% CS Seq.).....Figure 3

Effects of Comic Strip-Taught Sequencing Skills on the
Writing Fluency of a Fourth-Grade Boy With a
Learning Disability in Written Expression

Since the beginning of formal education, educators have been trying to get students to record their thoughts in writing. The numerous subtasks that must be mastered in order to create a grammatically correct, fluent piece of writing make this a monumental undertaking for instructors. Educators and researchers have given considerable attention to the development of effective strategies that can be used in the classroom to meet this challenge. The process that we, as educators, need to determine is how to motivate elementary students to pay attention to the details of the writing process. The entire operation involves numerous components and each presents challenges to the instructor. In order to understand how factors effect performance on school-related tasks, research psychologists study only a few at a time (Biehler and Snowman, 1993). Although this limited focus approach is conducted to limit uncontrollable factors, it sometimes ignores important components relating to the

subject. The focus of this study is on content and fluency. Content refers to the continuity of thought represented in a piece of writing, the ability to develop a topic logically and organize it coherently, and the inclusion of only relevant information. Fluency is defined as the quantity of verbal output and refers to the number of words a child writes (Mercer, 1992). Fluency relates to both sentence length and complexity. Applebee (1978, cited in Nodine, Barenbaum, & Newcomer, 1985) found that a relationship exists between adequacy of composing a story and the length of the story, or fluency.

Houck and Billingsly (1989) found that students with learning disabilities write fewer words and sentences, write more words per sentence, produce fewer words with seven letters or more and fewer sentence fragments, and have a higher percentage of capitalization and spelling errors. When presented with a topic about which to write, however, students with learning disabilities can be taught to organize their thoughts in sequential order. Several educators (Englert & Mariage, 1991; Graham & Harris, 1988, 1989)

recommend that the teacher use some form of prewriting activity before commencing the writing task. Teachers usually incorporate outlines or idea maps utilizing activation of background knowledge, idea generation and thought organization. Many prewriting strategies have been formulated, both formally and informally, to be used in classrooms with students of all ages. Motivation is important in every classroom and a possible method utilizing comic strips that attempts to make writing fun could be used to enhance prewriting assignments for children.

Many educators have recorded their discovery that comics have tremendous and varied value and have identified many ways to utilize them in the classroom. Smith (1983) reported a study in which children were presented with cut up comic strips and then asked to connect them, form puzzles, and explain the sequence of events. Japanese comic strips, or "manga" are used for the public to gain an appreciation for the differences and similarities of their people (Caron, 1985). Ramos (1991) reported that comics can be used to combine language learning and cultural education.

Guenther (1987) reported a number of ways that newspapers can be used as a learning resource for gifted education programs. One activity that has been suggested in the literature for teaching sequencing skills is a strategy that utilizes comic strips to lead to writing fluency and improved content. This activity involves the child attempting to write a story from a comic strip, including information that he has received through the pictorial and textual cues. Even though the idea of using a comic strip to create the basis for a narrative is one that surfaces regularly as a suggested activity to be used in the classroom, this researcher could not identify any research that has been completed that indicated the degree of the effectiveness of comic strips.

Ideas Plus: A Collection of Practical Teaching Ideas, Book 6 (1988) suggests that the student rewrite a comic strip in the form of a narrative, using transition words to indicate the order of events. The purpose of this project is to determine whether this type of activity can be used as an enjoyable but also effective teaching strategy to increase the writing

fluency skills of an upper elementary student with a learning disability in written expression.

Most educators would agree that the earlier a child starts learning the subconcepts of writing, the easier it will be for him to refine his writing skills in later life. According to Englert (1992), writing is best taught as the students and teacher begin to discuss writing. By the upper elementary grades, students should be practicing techniques that will foster writing growth.

Statement of the Problem

This study was designed to determine if a fourth grade boy with a learning disability in the area of written expression would benefit from the use of comic strips designed to teach him to follow sequential steps in his writing when describing an event or telling a story.

Literature Review

Writing is an art that requires the mastery of many different skills. Unfortunately, these are skills that are very difficult for students with learning disabilities to master. Research suggests that

although adolescents with learning disabilities have a rudimentary knowledge of story form, this knowledge is less well developed than that of their nondisabled peers. The students with learning disabilities also have greater coherence problems in their writing and are less fluent writers (Vallecorsa & Garriss, 1990). In terms of generating content, students with learning disabilities produce written texts that are inordinately short (Graham & Harris, 1989). Examinations of their compositions reveal that they frequently fail to include critical elements such as how a story ends. Furthermore, a considerable amount of irrelevant or nonfunctional information is often included (Graham & Harris, 1989). Because of the difficulties that these exceptional students have with written expression, it is necessary to focus educational efforts here. A study done in 1989 shows that this is happening in our schools. Christenson, Thurlow, Ysseldyke, & McVar (1989) reported that students with learning disabilities and mental retardation spent a larger percentage of time in written language instruction than students in the

mainstream classes. Across the special education setting, students with learning disabilities spent the largest proportion of their total time in written language activities.

Hallahan and Kauffman (1991) divided written language skills into handwriting, spelling, and composition. Allen (1982) divided the skills into similar groupings. He identified handwriting, vocabulary and spelling, grammar, and idea formation. This last category was divided into organization, the structure of the topic, the sequences of sentences, incomplete sentences, and unrelated sentences.

Spelling is an example of an analytical component that is generally viewed as indicative of good writing but may not warrant attention for the young, inexperienced writer. Spelling skills are important but mastery is not necessarily essential to excel at the writing process. With today's technology, students can write with a Franklin speller on their desk, a spell check on their computer, or a dictionary on their shelf. Any of these spelling helpers can be used to edit the final draft, but such technological advances

are not available to assist the writer who has difficulty putting thoughts down on paper in sequential order or organizing a story chart. Starlin (1982) related that accuracy tends to be overemphasized in schools, and fluency is largely ignored. He said "this lack of fluency and accuracy is the single most important reason many students are incompetent in written communication."

Shaughnessy's study (cited in O'Neill, 1990) stated that many teachers continue to practice a "pedagogy" focusing more on correctness, form and product rather than on motivation and process. Teachers who concentrate too much on the mechanics may have lowered students' interest and development in writing simply because the activities are not motivational or appealing to them. MacArthur and Graham (1987) found that, when the mechanical requirements of composing were removed by allowing the students to dictate their stories, students with learning disabilities in the upper elementary grades composed better stories (Graham & Harris, 1988).

Graham (1989) stated that students with learning disabilities have been characterized as having severe and persistent writing problems. Perhaps the ineptitude in written expression to juggle the demands of the mechanics of writing with organized and sequential story content is a repercussion of their feelings of inadequacy towards the mechanics involved. Graham and Harris maintained that learning disabled students' problems are, in part, due to difficulties in their ability to express the knowledge they have about a topic (Graham & Harris, 1989).

Graham (1990) found that students with learning disabilities make considerably more spelling, capitalization, and punctuation errors in their compositions and their handwriting is less legible than their nondisabled peers. He hypothesized that the difficulties students with learning disabilities have with the mechanical requirements of producing a written product can interfere with their writing. During the planning stage of writing, skilled writers apply strategies to decide the writing purpose or goal, discover and collect ideas, manipulate and group ideas,

and decide on the presentation and organization of the text (Englert & Raphael, 1988). The inexperienced writer who has not yet mastered these demands has to attend to the lower-level skills of getting language onto paper and that may interfere with higher-order skills, such as planning and content generation (Graham, 1990). Additional problems with which students with learning disabilities are forced to contend are slow handwriting rates, problems with writing conventions, difficulty activating prior knowledge, and sustaining their attention while thinking about the topic. All of these inabilities can, and often do, interfere with higher order cognitive processes, such as content generation and planning, affecting both the length and quality of their compositions (Vallecorsa & Garriss, 1990).

Students with learning disabilities are generally not aware that the basic purpose of writing is an act of communication; rather, they approach writing as a test-taking task. In addition, their writing lacks fluency and they tend to write shorter sentences and stories. They may also have difficulty understanding

writing strategies such as planning, organizing, drafting, and editing (Hallahan & Kauffman, 1991). Although a study by Barenbaum, Newcomer and Nodine (1987) did not completely support the finding, the literature that they reviewed prior to their study suggested that story knowledge depended upon the verbal and cognitive abilities gradually acquired with maturation, primarily between the ages of two and ten. Vallecorsa and Garris (1990) found that writing ability related to coherence did not improve with age for students with learning disabilities. Instead, it required the development of a number of rather sophisticated cognitive, organizational, and mechanical skills.

Videen, Deno, and Marston (1982) suggested that the number of correct word sequences is a valid and reliable indicator of whether or not a student is proficient in written expression. Correct word sequences may play a part in proficiency, but sequential sentences and topic sentences are also important. Robledo (1988) stressed the importance of sequencing skills in elementary students. Having

children read certain items along with the use of pictures or diagrams related to the story allows the individual to follow along with what was read.

One of the most difficult tasks for students with learning disabilities to do is to organize a story and all of its parts before starting to transcribe the events. Frey (1974) emphasized the importance of showing how to relate two points of comparison to a larger idea; how to compose an introduction that suggests the organizational plan of the total paper as well as stating the subject and indicating the writer's attitude toward it; how to accumulate details to support an idea and how to arrange them for maximum effectiveness. For this reason, research supports the development of the thought processes that need to be present before the composing ever begins.

Wong and Wilson (1984) found that children with learning disabilities did not have a firm knowledge of what constitutes an organized paragraph within a passage. They could not identify a disorganized passage, nor could they articulate the differences between the organized and disorganized passages with

which they were presented. Englert and Mariage (1991) arrived at a similar conclusion, stating that the compositions of students with learning disabilities were significantly less organized and contained fewer ideas than those of low- and high-achieving students. They also concluded that these students possess less complete knowledge about processes related to organizing ideas, as well as revising their work. Vallecorsa and Garriss (1990) stated that individuals with learning disabilities lack a sensitivity to various patterns of textual organization and to the relative importance of major and minor ideas. These problems in writing generally cause the stories by students with learning disabilities to be less well developed than that of their peers.

The failure of work organization their work prior to composing characterizes young and poor writers who lack goal-oriented planning and who have as their primary concern what to say next, rather than asking themselves how the idea relates to the major premise. These children need to attend to both the text structure and the intention of the text. If they do

not, the resulting work may show redundancies, early terminations, or irrelevancies (Thomas, Englert, & Gregg, 1987).

Watkinson and Lee (1992) identified eight curriculum-based measures of written expression. These measures included: a) the number of words written, b) the number of legible words, c) the number of words spelled correctly, d) the number of correct word sequences, e) the number of incorrect word sequences, f) the percentage of legible words, g) the percentage of words spelled correctly, and h) the percentage of correct word sequences. Tindal and Parker (1989) cited virtually the same components but they divided issues of correct sequencing into two parts. They addressed 1) words written in correct sequence and 2) words written in continuous sequence. Deno, Marston, and Mirkin (1982) also attempted to formulate valid measurement procedures for written expression. They cited five indices: a measure of grammatical maturity, the number of "mature" words, the total number of words written, word length, and spelling. Farr (1989) did a similar study and added an additional concern by

looking at word choices. He looked at the most often used words and the less frequent word choices to determine word use maturity. The concerns of each of these researchers and their determination that the mastery of specific skills would allow a student to write successfully and effectively is notable, but the focus of this investigation lies more within the skills that directly influence writing fluency and content. Both holistic and analytical viewpoints should be considered when evaluating student writing but at different stages of the composing process. The holistic domain represents a general impression which is centered largely around the content or thought behind a topic and less concerned with mechanics. An analytical approach is concerned with several characteristics of writing that are separately analyzed (Tindal & Parker, 1989). Though the mechanics of writing are important and need to be addressed for a young writer to experience improvement, it is more crucial for the young writer to master the exploration of ideas and expression.

Students with learning disabilities often experience difficulty gaining competence and confidence in their writing. In addition, teachers have the demanding role of evaluating their work. Timing is crucial since a demand for perfect mechanics can inhibit productivity, but the teacher also faces the no-win task of assigning a grade to a piece of written expression. Hall (1981) suggested a way to categorize student writing in her book, Evaluating and Improving Written Expression. She stated that written expression can be evaluated on six general areas of performance: 1) ideas/content, 2) organization skills, 3) vocabulary usage, 4) sentence structure, 5) spelling, and 6) handwriting. Each of these general areas is then divided into three levels of performance: limited, growth, and mastery. In general, writing at the limited level is unfocused. Writing at the growth level focuses on the purpose for writing and the audience for which the writing is intended. Mastery writing is clearly focused (Hall, 1981). Since this project is concerned with the first two of Ms. Hall's identified writing components, the task is to find a

way to bring the students up from the limited level to the growth level and from the growth level to the mastery level of writing.

To implement the instruction regarding the use of sequential sentences, or thoughts, that follow from the starting point of a paper to the end without straying off course, a teacher needs an effective tool to use. For years teachers have attempted to have students outline their thoughts in a prewriting exercise. This practice is performed primarily to aid the student in organizing thoughts, setting a direction and purpose for the writing and, in fact, developing a writing map to show him where to go and how to get there. In a chapter of Teacher to Teacher, by Olson and Homan (Eds.), Davis described how to use a story chart that includes the story grammar elements of main character, setting, other characters, the story problem, and solution (1993). This method is very effective, but it is an abstract technique that some students with learning disabilities may have difficulty mastering. In fact, if the writers who learn to use this method effectively don't grasp the concept until high school,

or late middle school, it may be too late. Perhaps if students can be inspired to learn to organize their thoughts sequentially when they first begin exploring their writing skills, the end results that show up in later life could be markedly superior. The challenge is to find a way to make outlines enjoyable enough to motivate elementary students to use them.

Since October 18, 1896 when the first American comic strip "Yellow Kid" appeared in the New York Journal (Wright, 1979) this form of written entertainment has provided satisfying reading for millions of children throughout the world (Wright, 1979). Comics are interesting, informal, colorful, and humorous (Richie, 1979). They help to lighten our mood and make us laugh in the midst of reading about the serious matters of the world (Communications Skills I. Reading Skills, Writing Skills, Using a Newspaper, 1984).

Children of all ages, of high and low IQ, girls as well as boys, good readers and nonreaders -- they all read the comics and read them with an avidity and an absorption that passes understanding (Frank, 1944).

Dexhant and Smith's study (cited in Kautz, 1985) noted that in their review of reading interest research that comic type reading material was very popular with primary, intermediate, and junior high age students. Schoof (1978) described comic books as fun to read. He continued saying that the stories, characters, and format are compelling and accessible to juvenile perceptions. They are easily comprehended even by poor readers. Witty's study (cited in Kautz, 1985) reasoned why children read comics so consistently: 1) they are short, exciting stories which satisfy children's desires to escape from the routine or monotony of daily life, 2) they are easily read and require relatively short periods of concentration, 3) they present familiar characteristics in a series of related experience, and 4) they are readily available in newspapers and are inexpensive. Taff (1968) stated that comics treat problem situations in a manner that provide an ideal bridge between picture reading and word reading. Communication Skills I. Reading Skills, Writing Skills, Using a Newspaper, (1984) stated that comic strips can be described as several different

types. Some comics are controversial, interpretive, and opinionated like "Doonsbury", some are humorous in which we are asked to laugh at ourselves like "Peanuts", and some contain satire, slapstick, wit, irony, or puns like "The Farside". Some cartoons use traditional roles, or stereotyping, and others incorporate nontraditional roles. Comics can also be used to reveal positive or negative attitudes towards a particular subject (Kautz, 1985). Comic strips of all descriptions can easily be incorporated into a school's curriculum, regardless of the ability level of the students.

Most of the literature cited up to this point has coincided with Sullivan's (1976) determination that one of the seven reasons people read is to find joy in the written word. Because students enjoy comic strips so much, teachers may find it desirable to incorporate their use into the curriculum. The compilers of Ideas Plus: A Collection of Practical Teaching Ideas, Book Six, (1988) stated that comic strips can be used to teach many elements of language and literature. "Comic strips can be a useful tool in the classroom. They can

help teach tone, symbolism, hyperbole, characterization and other elements of language and literature." The authors of Language Everywhere -- Arts, (1984) stated that comic strips can be used to teach a simple form of dialogue writing. They also pointed out that since most students read some form of comic strip, discussions of the writing involved is easy to start. Students are often surprised to realize that such a simple form of writing needs to be carefully thought out. The space constraints of a comic strip require students to write concisely, and the necessity to build a punch line requires students to think carefully about the words used. As O'Neil (1990) stated, comics are a way to motivate the child's thinking process and to teach him sequencing skills. L. Sealey, N. Sealey and Millmore (1979) also incorporate ideas using comic strips into sequencing instruction for primary children.

An added bonus for incorporating comics into the curriculum of students with learning disabilities deals with the difficulties they have with writing fiction. These students often feel that a story is only

interesting if they involve "two murders, a robbery, and a suicide", (Calkins, 1986) like they see on television. Young writers can benefit from simply seeing that their ideas can be interesting and funny. Cartoons and comic strips, by nature, are fun. They tell adventure stories, point out human frailties, let us poke fun at ourselves, and convey our values (Lawson, 1984).

Teaching writing carries with it some very demanding responsibilities which include planning the best activities to meet all of the student's needs. Unfortunately, the best made plans are no good if the teacher is not able to motivate the student to learn. Ebisutani (1991) stated that the challenge for teachers is two-fold; motivating the student to become engaged in the literary process and helping the teacher to engender such engagement. As suggested by Ebisutani, dealing with at-risk students involves adapting teaching styles so that they can be motivated to enjoy learning.

Graham (1990) found that although students with learning disabilities are similar to nondisabled

students in the lack of pre-writing preparation, they are less likely to direct attention to the constraints imposed by the topic or the whole-text organization of their papers. Comic strips can help the young writer to focus on the action sequence, or topic that they are writing about. The sequence of events illustrated can be used as a guide for story development. Using the comic strips in this way would help the writer to stay on the topic and also help him to organize the events in a logical and progressive manner. A precaution regarding this technique, however, is not to over-rely on its use. Once a child has developed the skill to compose a story with the help of a strip, he should be encouraged to write from experience or from the imagination. Calkins (1983) stressed the importance of having students come up with their own ideas. She found that students become accustomed to responding to topic requests from teachers and have difficulty coming up with their own ideas. When given the opportunity to create their own stories for the first time in a school environment, the students in her study had great difficulty. Calkins termed this phenomenon as being

"taken off writer's welfare." She firmly stated that students should be allowed to select their own topics and write from their lives. Salo-Miller (1984) found that children can write more freely and accurately when they begin with a true story. She suggested that students be encouraged to draw about something that happened to them and then write about the picture and what they can recall from the actual event. A very sensible transition from writing with the aid of comic strips to progressing toward composing with no visual prompt to draw from can be accomplished in this manner.

Hypothesis

The acquisition of skills learned through a program that incorporates the use of comic strips to encourage motivation and to teach story writing sequencing will help to improve the writing fluency and content of a fourth-grade boy with a learning disability in written expression.

The phrase "to encourage motivation" is included because of the importance of this factor when dealing with elementary age students. If teachers can't motivate their students to enjoy writing early in their

educational careers, they will most likely have problems voluntarily engaging in writing and their skill refinement will suffer. Cartoons are colorful, humorous, and enjoyable and can therefore be a motivating tool for young writers.

Writing fluency refers to sentence length and complexity. The total number of words written in the samples after the intervention takes place will be an increase at a significance level of .05 over the pre-intervention writing samples. Fluency includes the percentage of correct word sequences, the percentage of sentences that logically flow in thought from one to the next, and the presence of a topic and summary sentence. The percentage of correctly sequenced words and sentences in post-intervention samples will also increase at a significance level of .05 over the pre-intervention samples. The presence of a topic and summary sentence will be 100% by the end of the unit, having one of each represented in each writing sample.

The aspect of improvement in content that will be addressed in this research refers to the ability of the student to stay on the topic, to develop it logically,

and to organize the material well. For the purpose of addressing these skills appropriately, the issue of general mechanics, such as spelling, capitalization and punctuation, will be ignored in the intervention phase of this project.

Method

Subject

The subject, Kirk, is enrolled in a special education resource class to receive instruction in the area of written expression. He is placed in the LD resource classroom in accordance with state and local definitions of learning disabilities. Informal observations indicate that he has trouble directing his writing. He tends to record thoughts as they enter his mind and writes them down with little or no regard for placement in the paragraph or with contextual progressivity. Standardized test scores show a discrepancy between his potential and his performance in areas related to written expression. In addition to Kirk's difficulties expressing thoughts on paper, he exhibits extreme reluctance to learn or use cursive writing and does not form conventionally accepted

printed letters. His letters are formed beginning at the bottom and making strokes in the counter clockwise direction. All straight lines are made from the bottom to the top or from the right to the left. His speech and oral language abilities are average.

Kirk is a caucasian boy, age 10-6 who lives with his mother and younger brother in Amelia, a rural, farming community 35 miles southwest of Richmond, Virginia. The name, Kirk, is a pseudonym for the subject in accordance with the regulations concerning the confidentiality of participants in research projects. Neither the subject nor his family was exposed to any risks, or requests for information, that was beyond the scope of normal school activities. His real name has been stricken from all samples, tests, and related materials.

Instrument

Shinn (1989) stated that holistic scoring measures and standardized tests do not provide a measure of fluency but curriculum-based measures do. Videen et al. (1982) suggested that the number of correct word sequences is a valid and reliable indicator of

proficiency in written expression and selected eight curriculum-based measures of written expression to assess the writing. This study utilized four of the eight measures outlined in Videen's work.

The Peabody Individual Achievement Test - Revised (PIAT-R) (1989) was chosen as the standardized measure of written expression. This subtest simply requires the student to write for no more than twenty minutes describing an event that is presented in a picture prompt. This particular instrument was selected to be used for several reasons. First, the use of the picture prompt coincides with the intervention procedures. Secondly, alternate forms of the test are beneficial for an assessment of skills before and after the intervention. The assignment is the same for both testing sessions, but practice effect is not an issue since the picture prompts are different, no feedback is given, and the time limit remains the same for both testing sessions.

A limiting factor of this particular scoring instrument is that the written language composite score is a combination of scores derived from the spelling

subtest and the written expression subtest. Since only one form of the spelling subtest is available, it was impossible to give separate but equal spelling subtests in the pre- and post- assessment sessions. The spelling test is a recognition style test. Four words were presented on a page for the student to see. The examiner states the word, reads a sentence containing the word and repeats the word one more time. The student must then select the word from the four presented in front of him. Since the tests were administered only six weeks apart, the spelling ability of the student remained relatively constant.

Before-intervention and after-intervention samples of writing were analyzed to determine whether skills gained during the unit were instrumental in improved writing performance. Four separate writing assignments were evaluated in an attempt to establish a degree of reliability. Each was assessed in the area of a) the total number of words written, b) the percentage of correct word sequences, and c) the percentage of correctly sequenced sentences. The statistical procedure used to determine the significance of the

results was the *t*-test for nonindependent means. The work also was evaluated for the presence of a topic sentence and a summary sentence.

The total number of words written (#Wd; Watkinson and Lee, 1992) refers to the total number of word-like units written, disregarding incorrect spelling, usage, or capitalization. Symbols and numbers that were not spelled out were not counted as words. Titles or words copied from the story starter are not included in the number of words counted.

The percentage of correct word sequences (%CW Seq.; Watkinson and Lee, 1992) describes the number of correct word sequences when divided by the sum of correct and incorrect word sequences: $\%CW \text{ Seq.} = \#CW \text{ Seq.} / (\#CW \text{ Seq.} + \#IW \text{ Seq.})$. The number of correct word sequences (#CW Seq.; Videen et al., 1982) consists of two adjacent correctly spelled words that are grammatically correct and make sense within the context of the phrase. Sequences made up of numbers or symbols next to words were not counted. Correct beginning capitalization and ending punctuation replace correctly spelled words for scoring word sequences at the start

and end of the sentences. The number of incorrect word sequences (#IW Seq.; Watkinson and Lee, 1992) refers to adjacent words that were not counted as correct.

Sequences made up of numbers or symbols next to words were not counted.

The percentage of correctly sequenced sentences (%CS Seq.) describes the number of correctly sequenced sentences when divided by the sum of correct and incorrect sentence sequences. $\%CS \text{ Seq.} = \#CS \text{ Seq.} / (\#CS \text{ Seq.} + \#IS \text{ Seq.})$. The number of correctly sequenced sentences (#CS Seq.) describes adjacent sentences that follow logically in thought and remain in line with the topic sentence. When a sentence in a sample could not be identified by proper punctuation or capitalization, the group of words that the subject most likely intended to constitute sentences were used. The number of misplaced, or incorrectly sequenced sentences (#IS Seq.) refers to adjacent sentences that were not counted as correct. A sentence was identified when a group of words expressed a complete thought, and made contextual sense, standing alone.

Experimental Design

The design applied in this experimental research project was the single subject A-B-A Design. The student engaged in a writing activity with no intervention, received the experimental instruction before engaging in additional writing activities, and finally completed one more writing assignment with no assistance.

The A-B-A design was chosen to allow the researcher to engage in an intensively designed one-to-one unit incorporating the experimental strategy. The one-to-one discussions about story content utilizing the comic strip format were designed to offer the student maximum opportunity for improvement in writing fluency.

To control for improvement in writing ability occurring due to chance, several factors were addressed. The student was not told that continuity of ideas and sequencing skills in writing would be observed. He knew only that he was working on writing skills. This was to limit the potential effects of the student being aware of the goals of the study.

The prevailing reward system utilized in the classroom for the successful completion of work and positive behavior remained unchanged. Emotions associated with the changing of reward opportunities could effect the motivation of student behavior while in the classroom. To avoid adding this undesirable variable the researcher held all classroom conditions and routines constant.

Although parent involvement is generally advisable and beneficial in their children's academic lives, the researcher chose not to request this involvement during the project. If any type of participation by the parent was suggested or required, or even allowed by asking the student to write one of the papers at home for homework, the results may have reciprocated findings that occur in response to parental attention or suggestion and not as a result of the independent variable in this study.

To control for comparable pre and post intervention writing samples, the student was presented with a list of 25 writing topics to choose from for his three original essays. The essays had to be along the

same lines as those that would be written after the intervention to assure the greatest possible validity of scores. For this reason, the student was forced to remain within boundaries of writing topics, but was not forced to write on a topic that did not interest him.

Another factor that was essential to this study, for this particular student, was that of scheduling. Kirk came to the resource room every afternoon for thirty minutes to work on written expression immediately before he boarded the bus to go home. The writing period, therefore, was at the end of his day and he was often tired. The scheduling of this project needed to be sensitive to this fact and reflected sensible timing. At the beginning of this project, Kirk was asked to write a lot with no help at all from the teacher. Since this was a complete reversal from what he has been accustomed to, the unit plan reflected alternate writing days and break days during the first part of this project to get the best pre-intervention writing samples possible. In a pilot study of the same type, a fifth grade girl did her best work on the first attempt, the next day put a little less effort into the

work and the third day merely jotted down what she could to get done. This response would inevitably affect the results of the pre- and post- intervention writing comparisons and was undesirable.

One factor that can play a part in research projects is that of the maturation process that occurs during the timespan of the study. To minimize this as much as possible, the entire experiment was compressed into about 5 weeks, which is as little time as possible, without running the risk of writer fatigue or frustration.

A control factor included to insure the best possible writing samples required the subject to read his story aloud before handing it in. This was an attempt to give Kirk a chance to supply words that he may have left out, or to change anything that he felt needed changing before it was evaluated.

The final control factor was that Kirk was not permitted to see any of the comic strips before his initial writing assignments were completed. In addition, the teacher did not supply any input as to the direction that any piece of writing could or should

take. Although this study was designed to help a fourth grade boy with a learning disability in written expression, it seems to be a strategy that would be beneficial to use with children of varying abilities. The research suggests that all children enjoy cartoons and all children will engage in the writing process in school. Once the child has developed the skill of forming letters and has moved onto the task of recording thoughts, this strategy could be effective. The more advanced a student becomes, the more difficult the comic strip could become.

The first day of the unit, the advice of Clark (1987) was followed. He stated that he always starts a class by presenting his students with a notebook. He called it a professional writing tool and said that it is a great way to build confidence and increase motivation by having the student see the momentum that he is building. He stated that having the correct tools is essential for the internal organization that is necessary for good writing. Kirk was presented with an attractive, thin, spiral notebook. He wrote a total

of eight stories and was able to take home a bound edition of his writing at the culmination of this unit.

The study began with the pre-intervention assessment that included the spelling and written subtests of the PIAT-R. Since Kirk was only in the resource room for thirty minutes at a time, the two subtests were administered on two consecutive days. He was then asked to choose three topics from a list and write about them, with no instruction except for a time regulation. This procedure took place at the rate of one topic every other day for a time limit of thirty minutes per topic.

Throughout the intervention, Kirk was encouraged to generate quantity without paying much attention to the grammatical considerations, handwriting, or spelling. James (1992) stated that interruptions for surface error corrections during initial writings appears to interfere with the writing quality in students with learning disabilities.

The third and fourth week were set aside for the teacher-assisted techniques of writing instruction, utilizing comic strips. The final two weeks were

devoted to assessment of skills gained (see Appendix A for unit plan).

Since this study was a single subject design, mortality was not a factor. If Kirk was absent from school for any reason, the experiment merely picked up where it left off when he returned.

Procedure

Prior to any phase of this project being initiated, permission for Kirk's participation was secured from both him and his mother, and the local school officials (see Appendix B).

The procedure followed was listed in sequential order designed for Kirk, but can be followed for anyone close to his age.

First, Kirk completed an essay from a picture prompt on the written expression, level 2, subtest of the PIAT-R, and the spelling subtest from the same instrument.

Next, given a list of topics, Kirk was asked to choose a topic to write about (see Appendix C). The only directions that were given was that he had 30 minutes to write the best story he could from the

written story starter. No other assistance was given in an attempt to eliminate teacher-influenced results.

Third, he was required to complete this same task two more times for a total of three pre-intervention samples. Multiple samples helped to address the issue of reliability.

Fourth, the student was shown a comic strip that correlated with the first topic that he chose to write about. The comic strips have black and white outlined pictures with empty word and thought bubbles (Schaffer, 1993). The student was given the opportunity to color the cartoons at this point, but this choice was optional. The author made the assumption that students who are visual learners, those who enjoy coloring, or those who view it as way to postpone "real work" would choose to color them. They would most likely enjoy seeing the finished product and hopefully it would encourage motivation. An assumption may also be made that merely because it is their choice to engage in the coloring, it would be more motivational. Regardless, since no direct link that has been identified between coloring and successful writing, coloring was optional.

Next, Kirk was required to fill in the word/thought bubbles. This required the teacher to prompt the student's thought process by asking questions about the perceived event, but the ideas for the speech bubbles belonged to the student. Once the cartoon was complete, the student was asked to place a fitting title above the strip. The student was encouraged to develop the titles into the topic sentence later, so they therefore attempted to summarize the action content. In addition, the student placed a summary sentence under each frame to specify action content in that segment of the sequence. This requirement was to emphasize event sequence.

Next, the connection between the story that was read and the comic strip was made. The content of the sample story was completely unrelated to avoid idea borrowing. The sample story was analyzed to identify transition words, sequencing clues and descriptors.

In the pilot study, the fifth grade, female subject had difficulty seeing the relationship between the sample story and the cartoon strip that she had completed. Because of this, the researcher chose to

use a more direct route to foster the greatest degree of generalization possible. The researcher supplied an example of exactly what was being described by completing one alongside the student (see Appendix D). A topic was chosen, thought bubbles filled in, panel summaries and title were chosen. This was paired with a written story describing the events to illustrate that the writer must combine information about the visual clues that are seen in the cartoon illustration and the written text that accompanies each frame. The sample was colored and presented in student-like form as a model.

The student was then asked to write a narrative based upon his comic strip. This procedure took place for all three of the topics that were originally chosen. This gave the researcher a pre- and post-sample of three different topics to evaluate.

After a two day break, Kirk was asked to write one final narrative to complete the post-intervention written expression subtest of the PIAT-R. These results were then compared with the initial attempt at the alternate form of the same test.

Analysis of Data

Each chosen topic has a pre-intervention essay and a post-intervention essay. Each essay was compared for total word production, and the percentage of correctly sequenced words and sentences. The values of each measure calculated from the pre-intervention essay was compared to the values calculated for each measure from the post-intervention essay that corresponded with it. The statistical procedure used to compare these values was the *t*-test for nonindependent means. Each sample was evaluated, also, for the presence of a topic sentence and a summary sentence. The alternate forms of the PIAT-R were compared for improvement in a written expression composite score and percentile rank.

Results

The results of this study, to some extent, support the original hypothesis: The acquisition of skills learned through a program that incorporates the use of comic strips to encourage motivation and to teach sequencing will help to improve the writing fluency and content of a fourth-grade boy with a learning disability in written expression. The results revealed

a degree of improvement in each area measured (see Table 1). The average percentage increase in each area is detailed in Table 2.

The average increase of total word production, #WD, was calculated as 35.5 %, the greatest being 103.57%, and the least being 13.28% (see Figure 1). A *t*-test for nonindependent means revealed that this increase was significant at the .10 level, with a coefficient of 2.99. These figures do not support the original hypothesis. Although the improvement was predicted, the hypothesis stated that the increase in scores would be significant at the .05 level.

The average increase of correctly sequenced words was calculated as 49.4 %, the greatest being 69.58% and the least being at 29.18% (see Figure 2). A *t*-test for nonindependent means revealed that this increase was statistically significant at the .01 level, with a coefficient of 7.49. These figures support the original hypothesis that this value would be significant at the .05 level.

The average increase of correctly sequenced sentences was calculated at 26.04% (see Figure 3). A

t-test for nonindependent means revealed that this increase was significant at the .10 level with a coefficient of 2.99. This value falls short of the predicted outcome of .05 significance outlined in the hypothesis. It should be noted, however, that in each of the four cases, the score derived for this component increased to 100%.

The comparison of alternate forms of the Written Expression, Level II, subtest of the standardized measure, the PIAT-R, showed an improvement in writing skills as well. The standard score for the pre-intervention written language composite was 90 and the percentile rank, 25. These scores can be compared with the post-intervention standard score of 101, an increase of 11 points, and a percentile rank of 53, an increase of 28 percentage points (see Table 3).

Twenty-five percent, or one out of four of the pre-intervention writing samples contained an identifiable topic and summary sentence. The samples written after the introduction of the comic strip style prewriting organization technique revealed a 75% improvement. Each post-intervention essay contained an

identifiable topic and summary sentence.

Discussion

Kirk was well aware of the fact that he was to be the subject of a study. Because of his anticipated importance and desire to succeed, he entered the situation with heightened anxiety. During the written expression section of the PIAT-R, he sat and contemplated the picture prompt for quite a while before he began to write. In addition, the actual time spent writing used up the entire amount of time allotted for this purpose. The pre-test essays were much the same. Kirk would sit and think about his story, giggle to himself and begin to write, carefully choosing words and changing wording. This behavior was different than his normal response to writing on an assigned subject in class. Prior to the beginning of this project, Kirk would merely pick up a pencil and begin writing when given an assignment. Although telling Kirk about his involvement in this project may have been a control factor that was overlooked it may be one that should have been willingly included. Having the subject engage in organizational thought

development in his own mind before writing certainly could have had an effect on the scores calculated for improvement in the all areas of investigation. A high pre-test score would lessen the overall gain measured but it would also give a more accurate one of the student's true ability in writing. If the pre-test scores in this area were as good as they possibly could have been, the gains assessed would be predictably more valid.

Kirk seemed to enjoy the comic strip format. He colored his pictures creatively and found humor in the story lines presented. He enjoyed playing with the idea behind the strips and would get excited about the story that he was preparing to write. The total number of words written increased from each pre-intervention essay to the post-intervention attempt. Although there was an increase in total word production, Kirk's thoughts were much more specific and directed and he was able to express more content in fewer words. The increase calculated for the percentage of correctly sequenced words illustrated this point. Since Kirk spent some time mentally organizing his thoughts before

writing the initial stories, the percentage of correctly sequenced sentences was high. The scores of each of the post-intervention essays in this area were 100%, noting a consistent increase. This was attributed to the comic strip format being presented in a sequential fashion.

As a recommendation for use in the classroom, the teacher should introduce this method as a preliminary exercise, or unit, only. The student should be transitioned from practice with a three- to four-frame picture prompt through one-picture picture prompt, written and oral prompt, to creating writing ideas on his or her own. Another recommendation would be to determine the varying degrees of effectiveness on students with subaverage oral expression skills.

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| Date | Description | Amount | Balance |
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APPENDIX A
Unit Plan

| wk | Monday | Tuesday | Wednesday | Thursday | Friday |
|----|--|--|---|---|---|
| 1 | Spelling Subtest PIAT-R | Written Expression Level II Subtest PIAT-R | Write on topic #1 | Break - class is in computer lab | Write on topic #2 |
| 2 | Write on topic #3. | Break - explanation of procedures for phase 2. | ID parts of comic strip. Discuss strip #1. | Break - class is in computer lab | #1 Fill in thought bubbles, title, color |
| 3 | Write frame summaries. Discuss begin middle, end. | Read sample stories and discuss the similarities. | Write Topic #1 | Break - class is in computer lab. | #2 Fill in thought bubbles, title, color |
| 4 | Write frame summaries. Discuss begin middle, end. | Write Topic #2 | #3 Fill in thought bubbles and color | Break - class is in computer lab. | Add frame summaries to #3, ID begin middle, end. |
| 5 | Write Topic #3 | Discuss the Writing Process. | PIAT-R Written Expression II | Break - class is in computer lab. | PIAT-R Spelling Subtest |

10-0-211-

The first part of the study was a pilot study to determine the feasibility of using comic strips as a teaching tool. The pilot study was conducted with a group of 10 students in a classroom setting. The results of the pilot study were positive, and it was determined that comic strips could be used as an effective teaching tool.

APPENDIX B

Permission Forms for Participation in Study

This section contains the permission forms for participation in the study. The forms are designed to be filled out by the participants and their parents or guardians. The forms include information about the study, the risks and benefits of participation, and the terms and conditions of participation.

Date

Dear Sir:

As you know, I am currently finishing up the requirements for earning a master's degree in teaching students with learning disabilities. As a part of this, I have been enrolled in thesis work this spring through Longwood College. I would like to take this opportunity to ask your permission to be able to center my efforts around a student who comes to my resource room every afternoon for supplemental instruction in written expression.

The project that I am undertaking deals with the writing fluency of upper elementary students with a learning disability in written expression. The student who has been selected to participate is currently coming to the resource room for thirty minutes of instruction aimed at his weaknesses in written expression. This instruction is in addition to the regular education in language arts that he receives.

The student has difficulty recording his thoughts when telling a story. Generally, when given the opportunity to write, he will jot down a statement describing the most exciting component of the story but has difficulty expanding this one thought into a story that has a beginning, a middle, and an end. This project was designed to target these needs, incorporating the use of comic strips. More information about the proposed procedure is attached.

I have not yet requested written permission from his mother, but have spoken with her very informally about it several months ago and she seemed delighted. I will contact her immediately following the receipt of your response.

I look forward to hearing from you regarding this matter.

Thank you,

Beth Woods

February 1, 1994

Dear Parent,

As I mentioned earlier in the year, I am getting ready to undertake my thesis project through Longwood College. The project was designed as a strategy that will help your son improve selected written expression skills that have surfaced as personal weaknesses. The strategy that will be implemented is one that is based on research supported literature, but the intervention is experimental.

If you feel that this project is something that you would like for him to be involved in and are willing to give your permission, please sign on the line below and have him return it to me at school as soon as possible. If you feel that this project is something that you would rather he was not involved in, please indicate that and have him return it to me.

If you feel that you need more information about the study before you are willing to give permission, I can be reached at school during the day at extension 326.

Thank you,

Mrs. Woods

_____ Yes, I give my permission for my son to be involved in this project, under the supervision of Mrs. Woods.

_____ No, I do not want my son to take part in this project.

(signature)

1. The first panel shows a man in a suit and tie, looking at a woman in a dress. He says, "You look beautiful." She replies, "Thank you, you look handsome." They are standing in a room with a chandelier.

2. The second panel shows the man and woman walking down a hallway. The man says, "I'm glad you're here." The woman replies, "I'm glad to be here with you." They are both smiling.

3. The third panel shows the man and woman sitting at a table in a restaurant. The man says, "This is a nice restaurant." The woman replies, "I like it here." They are both looking at each other.

4. The fourth panel shows the man and woman standing in a room. The man says, "I love you." The woman replies, "I love you too." They are both holding hands.

5. The fifth panel shows the man and woman walking down a hallway. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.

APPENDIX C

Topic Choices

1. The first panel shows a man in a suit and tie, looking at a woman in a dress. He says, "You look beautiful." She replies, "Thank you, you look handsome." They are standing in a room with a chandelier.
2. The second panel shows the man and woman walking down a hallway. The man says, "I'm glad you're here." The woman replies, "I'm glad to be here with you." They are both smiling.
3. The third panel shows the man and woman sitting at a table in a restaurant. The man says, "This is a nice restaurant." The woman replies, "I like it here." They are both looking at each other.
4. The fourth panel shows the man and woman standing in a room. The man says, "I love you." The woman replies, "I love you too." They are both holding hands.
5. The fifth panel shows the man and woman walking down a hallway. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.
6. The sixth panel shows the man and woman sitting at a table in a restaurant. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.
7. The seventh panel shows the man and woman walking down a hallway. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.
8. The eighth panel shows the man and woman sitting at a table in a restaurant. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.
9. The ninth panel shows the man and woman walking down a hallway. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.
10. The tenth panel shows the man and woman sitting at a table in a restaurant. The man says, "I'm going to get you a gift." The woman replies, "I don't need a gift." They are both smiling.

Choose one of the following stories to write about. Try to make your story as long and interesting as you can. Spelling does not count in the first draft of your paper.

1. A cat teaching its kittens to hunt mice.
2. A bird hunting for a worm to eat
3. Telling your dad about an F on your report card.
4. Having to hit a really fast-pitched baseball.
5. Wearing a monkey suit to scare your friends.
6. Being a caveman who has to hunt for his own food.
7. Being an ant who wants to eat an apple.
8. Being a bear who wants to get honey from a bee.
9. Training a trick elephant.
10. Skating downhill.
11. Trying to get some food that you can't reach.
12. Meeting an alien for the first time.
13. Getting a parrot to talk.
14. Living life as a kangaroo.
15. Swinging from tree to tree like Tarzan does.
16. Finding a magic lamp.
17. Scuba diving into a dark tunnel.
18. Being a stranger on another planet.
19. Playing football with a friend.
20. Being a magician.
21. Scaring a friend who has the hiccups.
22. Being a grasshopper.
23. Finding a magic toad to kiss.
24. Catching a big fish.
25. Being a cat having a fight with a dog.

APPENDIX D

Sample Utilizing the Comic Strip

A Rough Trip Home

Getting home isn't always easy. Some people get
(**topic sentence**)
stuck in traffic jams, get a flat tire, or some even
run out of gas. Well, my name is Rupert D. Poacher and
(**who**)
I want to tell you about one day last week when I was
(**when**)
traveling home from working in the jungle.

I was all excited because I had a brand new
elephant to ride home. (1) The trip is a long one and
my feet get tired and blistered when I have to walk.
Anyway, Bruno, my new elephant, was great! He helped
me to climb up on his trunk and pushed me over his head
to get in my seat. (2) The new red saddle that I bought
him fit well and I was ready for the ride home.(3)

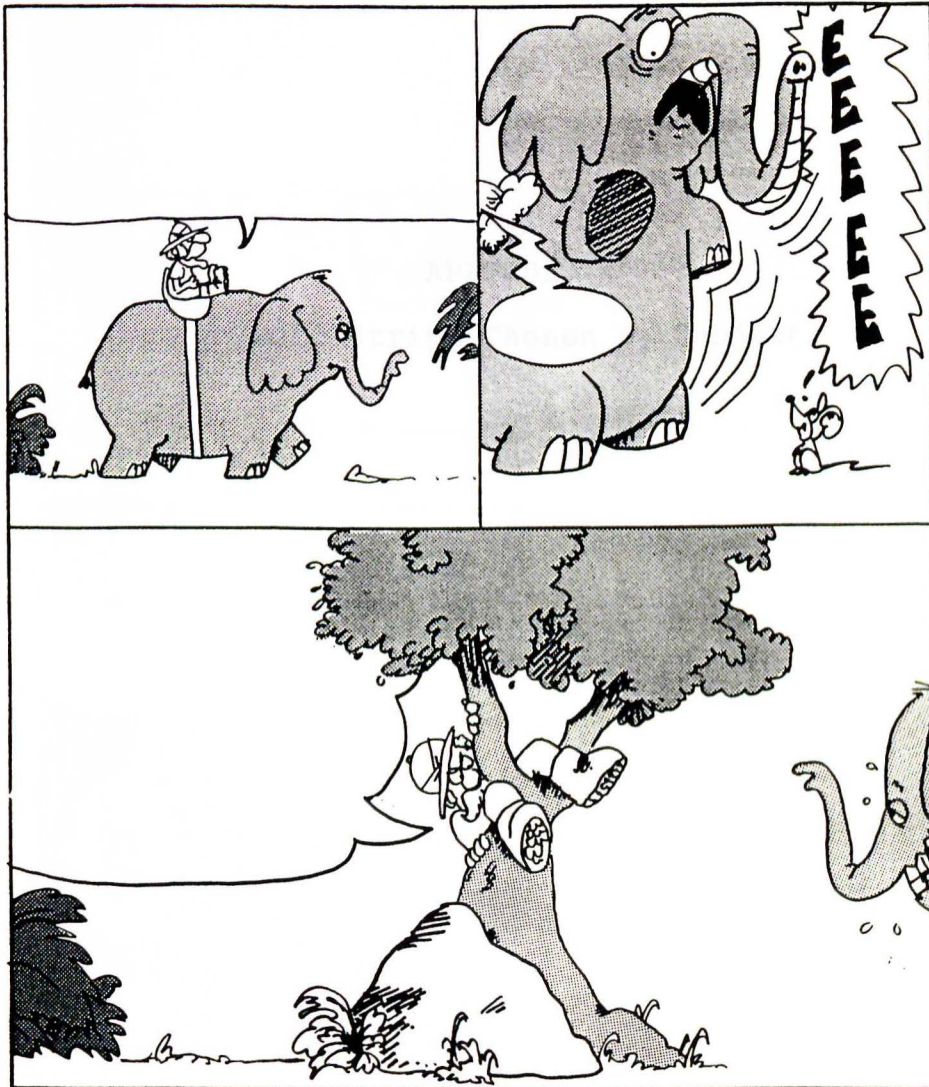
What did I possibly have to worry about? Bruno
was so big, if we got into a traffic jam he could just
stomp on everybody! Nothing could bother me, all I
needed was a t.v. to watch while I rode! Things were
going pretty well until this itsy bitsy little mouse
walked by. (4) I have never seen such a big animal be
so afraid of such a little, insignificant rodent.
Well, no matter why or how it happened, that big dumb
pachyderm reared up and threw me right into a tree.

All in all, it was a very rough trip home.
(**summary sentence**)

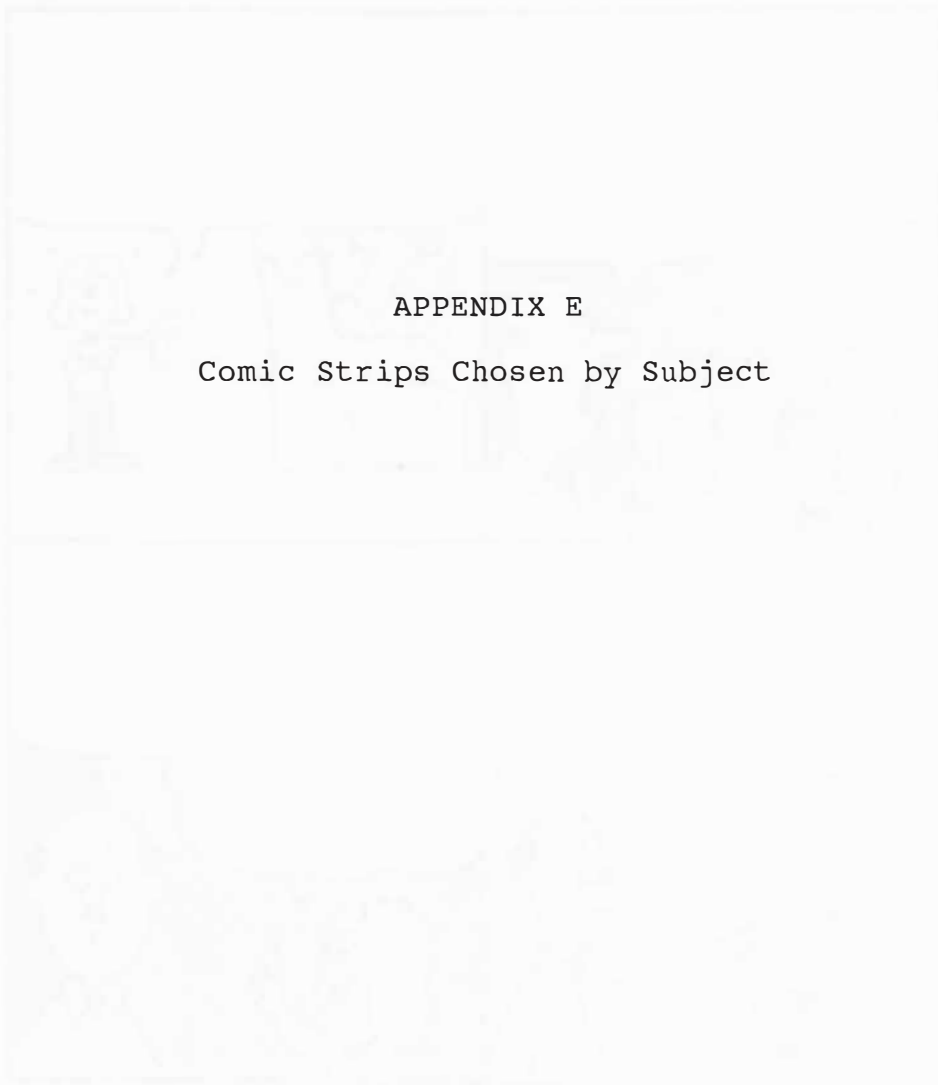
Name _____ Date _____

Directions: Think of a story to fit the pictures below. Decide what the characters should say and fill in the balloons. Then write a title for your cartoon.

Title:



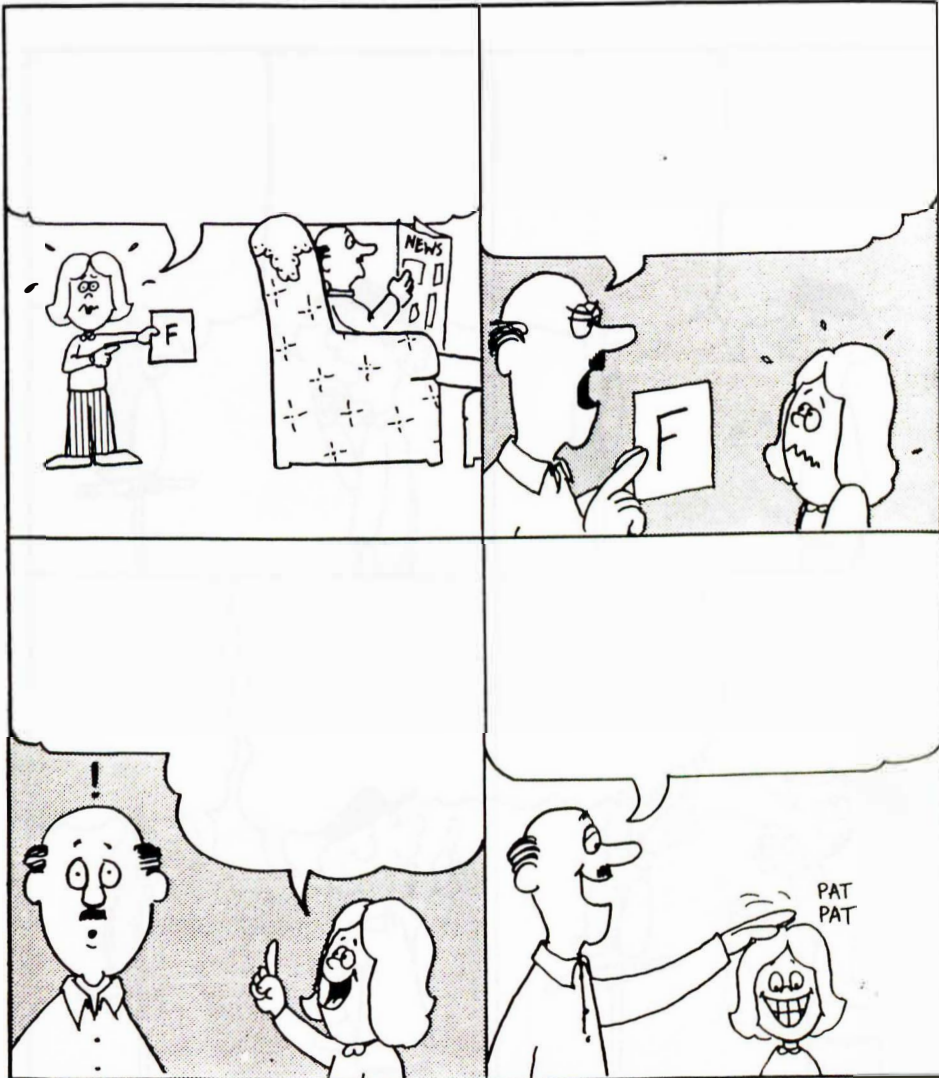
These are the names of the comic strips that were chosen by the subjects for the study. The names are listed in the order in which they were chosen. The names are listed in the order in which they were chosen.



Name _____ Date _____

Directions: Think of a story to fit the pictures below. Decide what the characters should say and fill in the balloons. Then write a title for your cartoon.

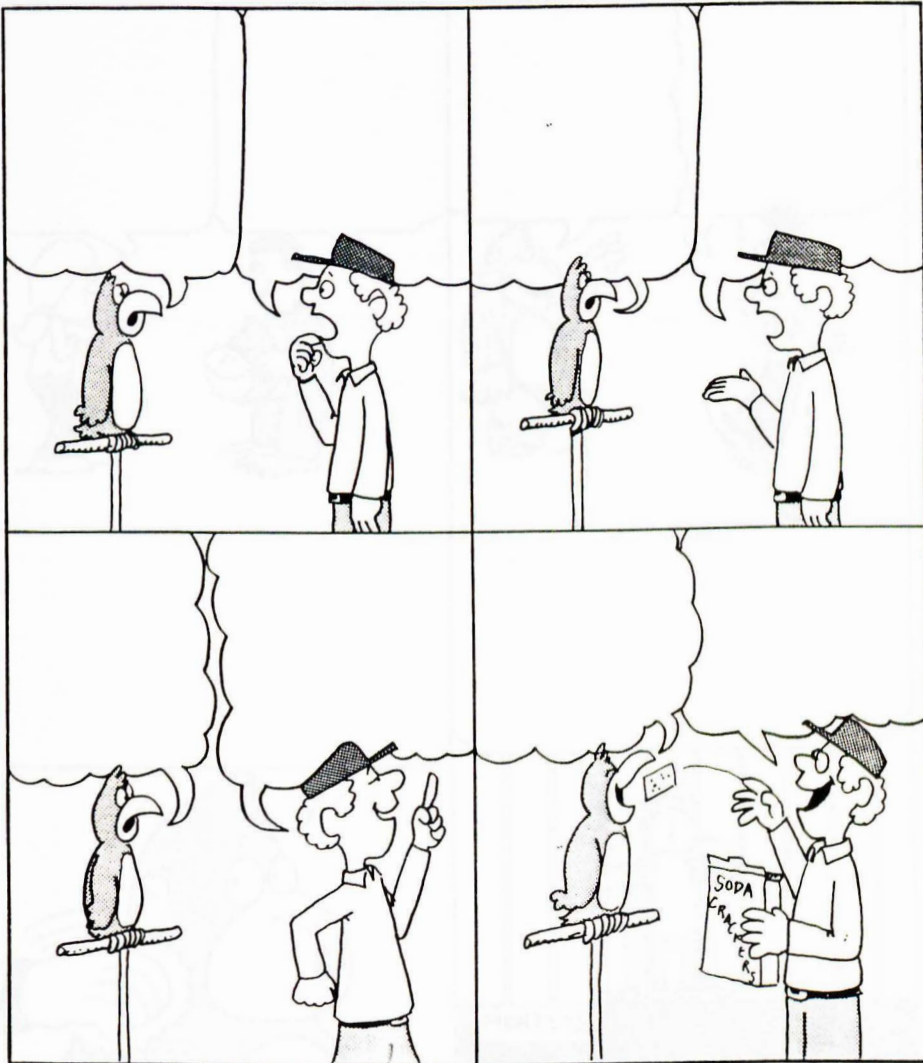
Title:



Name _____ Date _____

Directions: Think of a story to fit the pictures below. Decide what the characters should say and fill in the balloons. Then write a title for your cartoon.

Title:



Name _____ Date _____

Directions: Think of a story to fit the pictures below. Decide what the characters should say and fill in the balloons. Then write a title for your cartoon.

Title:

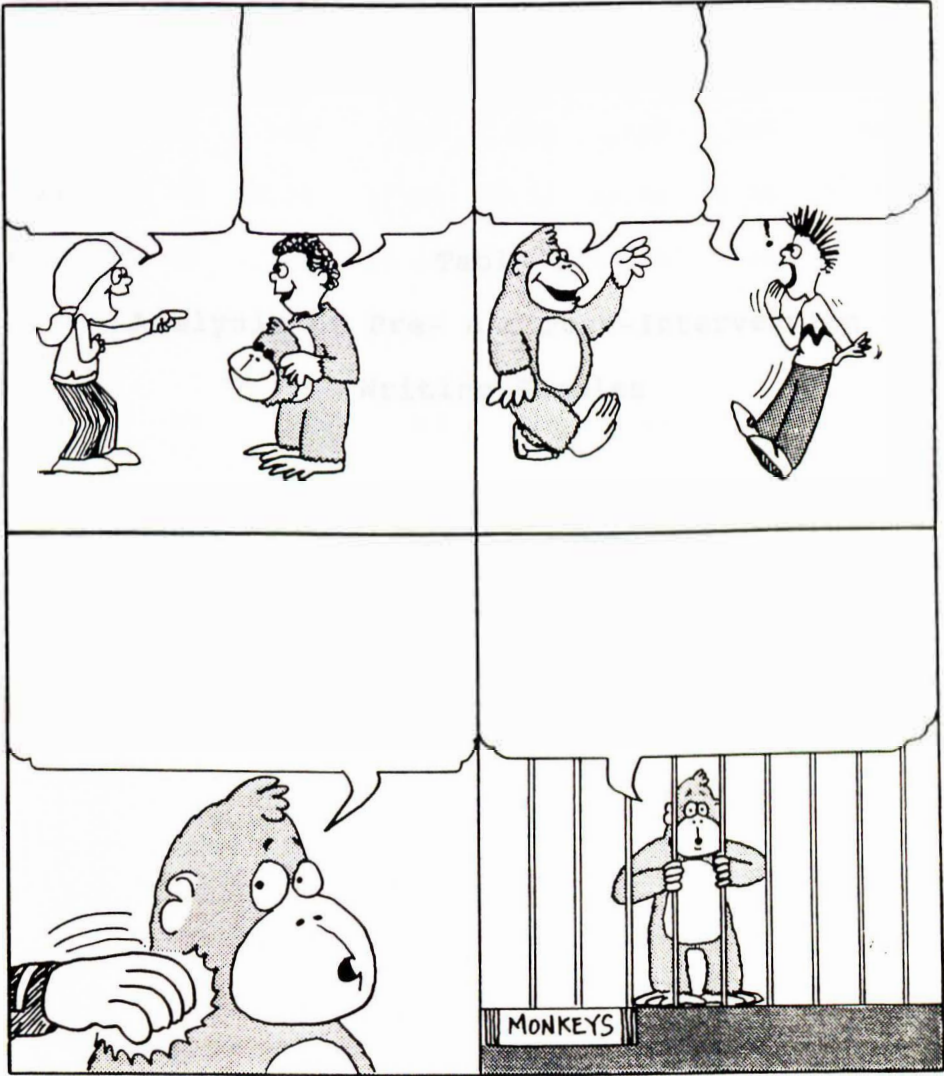


Table 1

Analysis of Pre- and Post-Intervention Writing Samples

| Sample | Pre-Intervention | Post-Intervention |
|--------|------------------|-------------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
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| 37 | | |
| 38 | | |
| 39 | | |
| 40 | | |
| 41 | | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | | |
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | | |
| 50 | | |

Table 1

Analysis of Pre- and Post-Intervention Writing Samples

Table 1

Analysis of pre- and post-intervention writing samples

| | Story 1 | | Story 2 | | Story 3 | | PIAT-R | |
|------------------|---------|-------|---------|-------|---------|-------|--------|-------|
| | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| #WD | 143 | 162 | 112 | 228 | 126 | 217 | 163 | 204 |
| %CW Seq. | 63.78 | 82.39 | 52.21 | 88.54 | 65.32 | 93.00 | 58.38 | 91.36 |
| %CS Seq. | 90.90 | 100 | 86.66 | 100 | 62.50 | 100 | 84.21 | 100 |
| Topic Sentence | NO | YES | YES | YES | NO | YES | NO | YES |
| Summary Sentence | NO | YES | YES | YES | NO | YES | NO | YES |

Table 1
Percentage Increases in Scores from Pre-Intervention
to Post-Intervention Measures

| Measure | Pre-Intervention | | Post-Intervention | |
|---------|------------------|-----|-------------------|-----|
| | Mean | SD | Mean | SD |
| ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... |

Table 2
Percentage Increases in Scores from Pre-Intervention
to Post-Intervention Measures

Table 2

Percentage Increases in Scores from Pre-Intervention
Measures to Post-Intervention Measures

| | Writing Samples | | | | |
|----------|-----------------|--------|-------|-------|-------|
| | 1 | 2 | 3 | PIAT | Avg. |
| #WD | 13.28 | 103.57 | 72.22 | 25.15 | 35.50 |
| %CW Seq. | 29.18 | 69.58 | 42.33 | 56.49 | 49.40 |
| %CS Seq. | 10.01 | 15.39 | 60.00 | 18.75 | 26.04 |

Table 1
Coefficients and Levels of Significance

| | CS | MS | MS |
|-----------------------|------|------|------|
| Coefficients | 2.91 | 1.82 | 1.94 |
| Level of Significance | .05 | .01 | .01 |

Table 3
Coefficients and Levels of Significance

Table 3

Coefficients and Levels of Significance

| | <u>#WD</u> | <u>%CW</u> | <u>%CS</u> |
|-----------------------|------------|------------|------------|
| Coefficient | 2.99 | 7.49 | 2.99 |
| Level of Significance | .10 | .01 | .10 |

Table 4
 Scores Calculated from the PIAT-R Written Expression
 Level II Subtest

| Item | Raw Score | Percentile |
|---------------------|-----------|------------|
| Blank | | |
| Copy | | |
| Read | | |
| Write | | |
| Copy + Read | | |
| Copy + Write | | |
| Read + Write | | |
| Copy + Read + Write | | |
| Mean | | |
| SD | | |

Table 4

Scores Calculated from the
 PIAT-R Written Expression, Level II Subtest

| | | |
|---------------------|-----|-----|
| Blank | 0 | 0 |
| Copy | 1 | 1 |
| Read | 1 | 1 |
| Write | 1 | 1 |
| Copy + Read | 2 | 2 |
| Copy + Write | 2 | 2 |
| Read + Write | 2 | 2 |
| Copy + Read + Write | 3 | 3 |
| Mean | 1.5 | 1.5 |
| SD | 1.0 | 1.0 |

Table 3

Scores Calculated from the PIAT-R Written Expression
Level II Subtest

| | Pre-test | Post-test |
|----------------------------|----------|-----------|
| Spelling | | |
| Raw Score | 49 | 49 |
| Age Equivalent | 8-3 | 8-3 |
| Grade Equivalent | 2.7 | 2.7 |
| Standard Score | 76 | 76 |
| Scaled Score | 4 | 4 |
| Percentile Rank | 5 | 5 |
| Written Expression | | |
| Raw Score | 35 | 40 |
| Grade-based Stanine | 5 | 5 |
| Developmental Scaled Score | 7 | 10 |
| Written Language Composite | | |
| Scaled Score Sum | 11 | 14 |
| Standard Score | 90 | 101 |
| Percentile Rank | 25 | 53 |

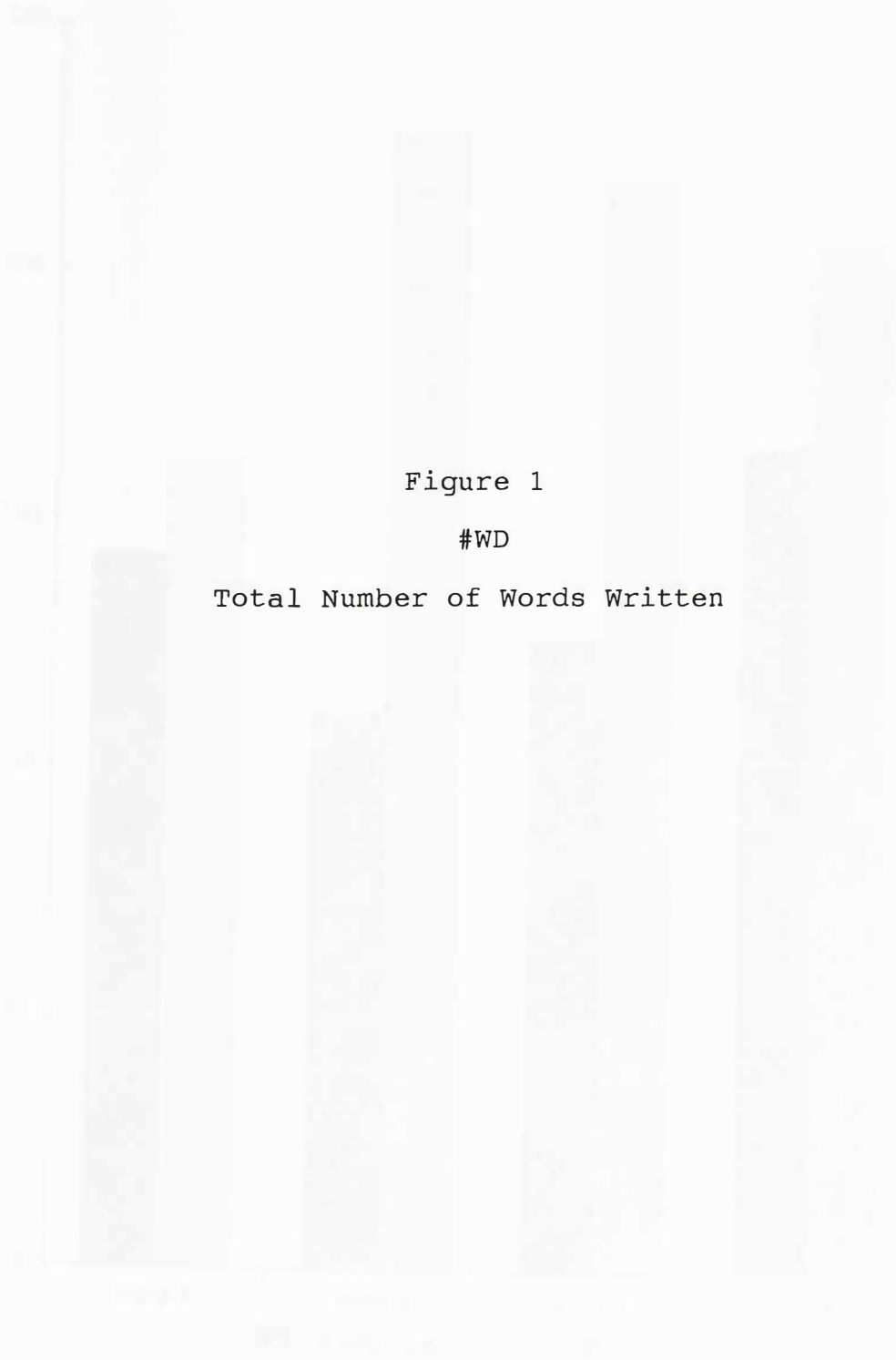
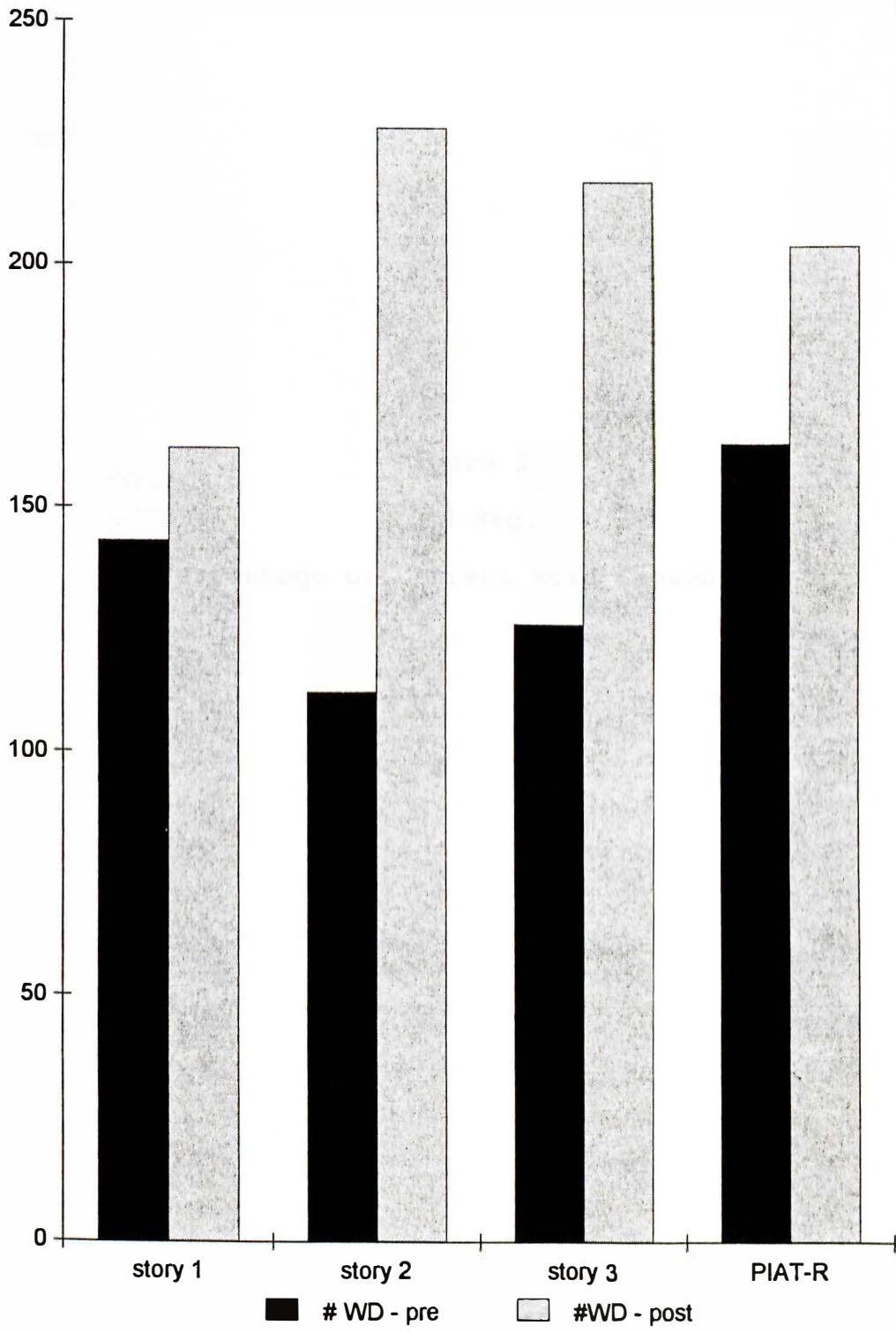


Figure 1
#WD
Total Number of Words Written



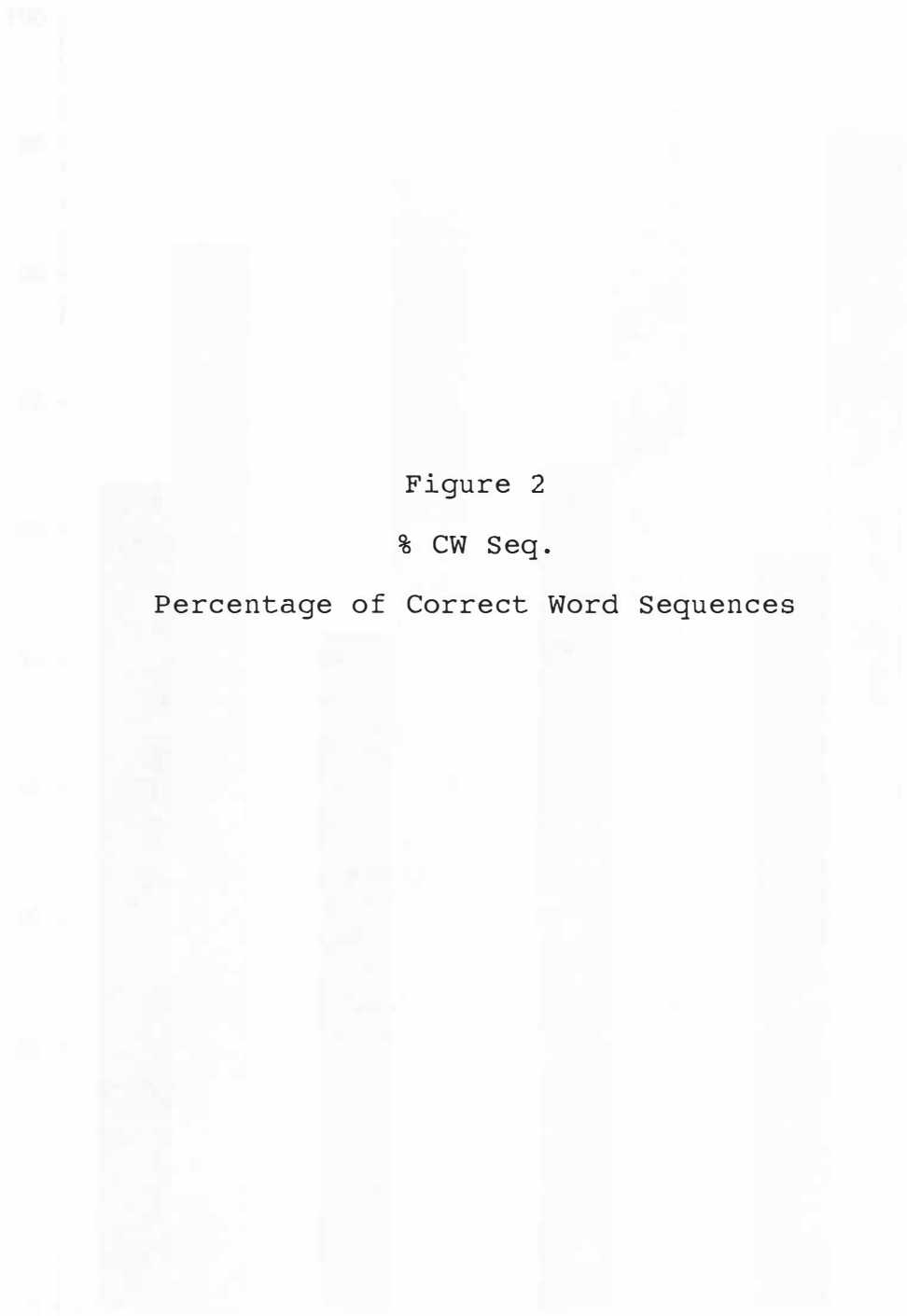


Figure 2
% CW Seq.
Percentage of Correct Word Sequences

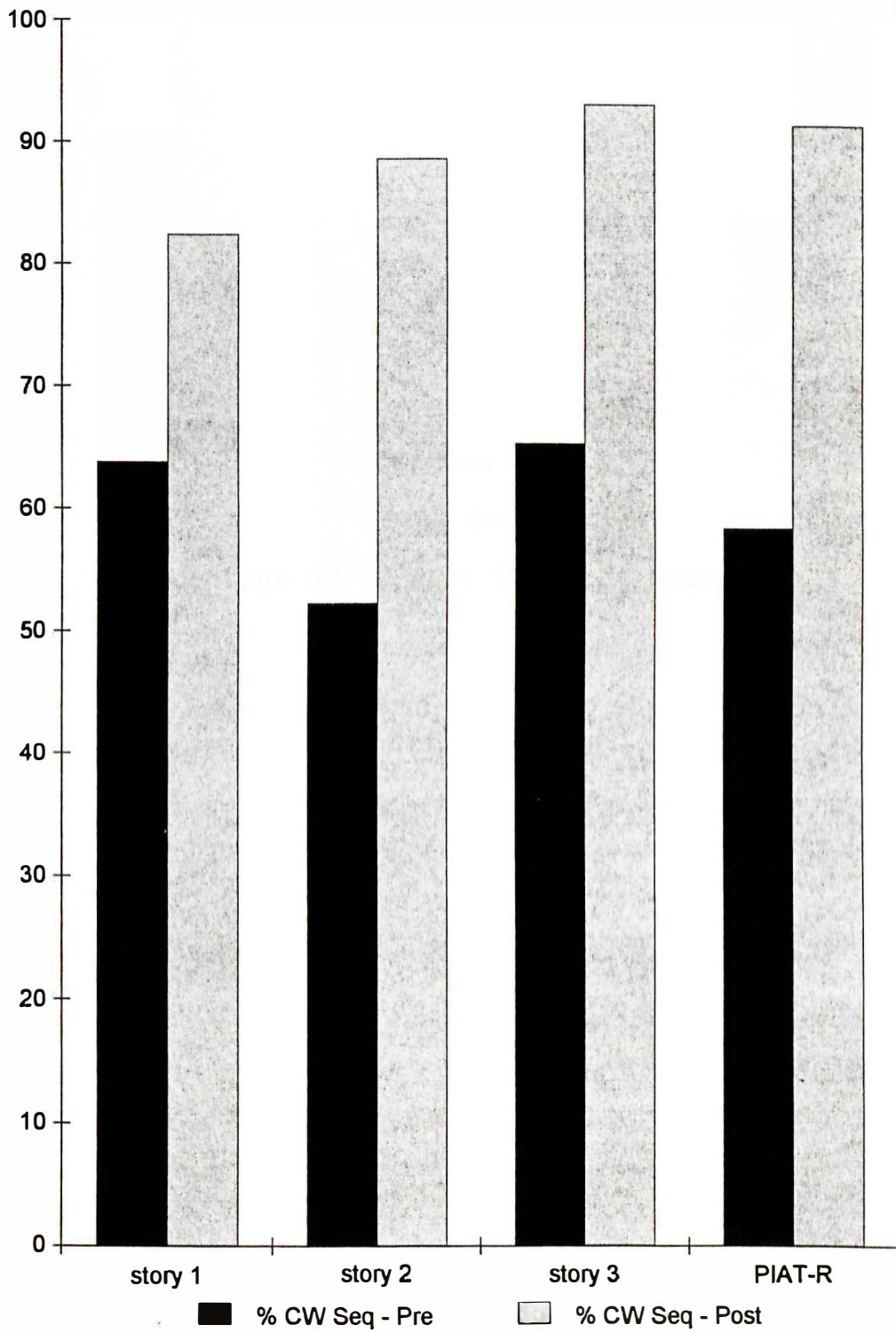
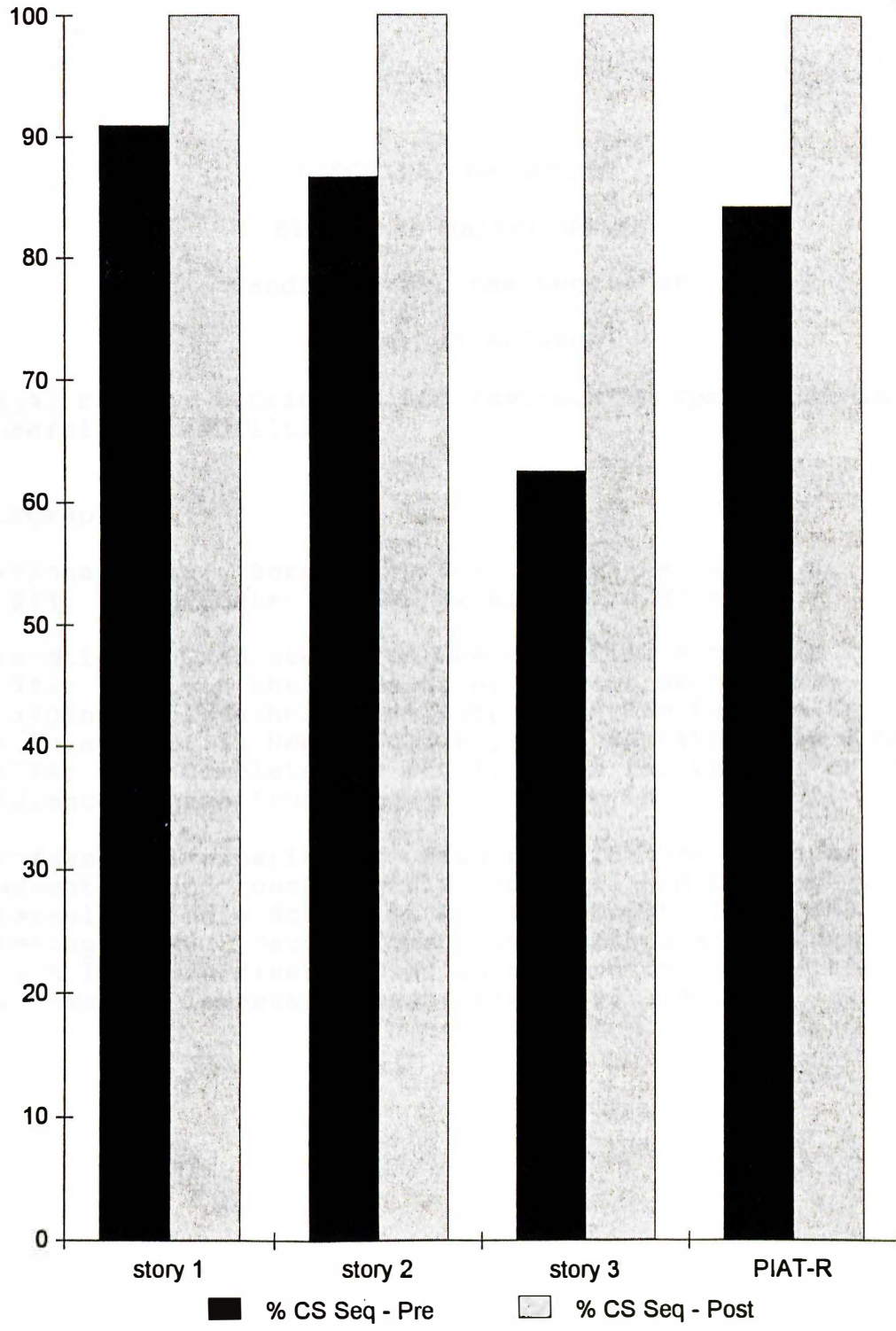


Figure 3

% CS Seq.

Percentage of Correct Sentence Sequences



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