The Effect of Graphic Organizers on the Writing of Students
in a Second Grade Classroom

THESIS

by

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Abstract

This study was designed to investigate the effect of the use of graphic organizers on the complexity of second grade students' writing.

Twenty-two second grade students between the ages of seven and eight from a rural western New York school district participated in this study. The study involved having each student compose two separate writing samples that were then analyzed to determine their grade level complexity.

A counterbalance design was used. On the first writing sample twelve randomly selected students wrote stories using a graphic organizer while eleven did not. On the second writing sample the student groups were switched. The original twelve randomly selected students now wrote stories without a graphic organizer while the other ten students wrote stories using a graphic organizer. The writing samples were then analyzed to determine a Bormuth Grade Level. A t test was used to analyze the data.

Results from the t test indicated that there was no statistically significant mean score difference between the writings created with graphic organizers and the writings created without the use of graphic organizers.

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CHAPTER I

Statement of the Problem

<u>Purpose</u>

The purpose of this study was to examine the effect of the use of graphic

organizers on the complexity of second grade students' writing.

<u>Need for the Study</u>

Adams (1996) affirms "...experts agree that writing is an important lifelong

communication skill" (p. 16). Adams also found that a review of educational

literature indicates there is a general lack of writing ability among today's students.

Unfortunately, as Schaeffer (1987) suggests, most teachers are concerned with the

final product of writing but have little understanding of the process that successful

writers use in creating that final product.

Teachers can help their students become better writers by modeling and

teaching higher order thinking and writing skills. Graphic organizers are an

example of a method for organizing the ideas to be used in a given writing activity.

Once completed, analysis of the overall rhetorical structure of the compositions

can provide an indication of how writers organize and develop their writing and, in

effect, manage its complexity (Kaminsky, 1993). The aim of this study was to

provide evidence in support of using graphic organizers when composing in order to increase the quality of written composition.

Null Hypothesis

There will be no statistically significant difference between the mean of the scores of the students who use graphic organizers and the mean of the scores of the students who do not use graphic organizers in the writing samples of second grade students.

Definitions

Graphic Organizers- These are visual representations of concepts that help students to learn, remember, and/or organize important information. Graphic organizers are also referred to in reading research literature as webs, story maps, semantic maps, structured overviews, concept branching, networking, clustering idea mapping, tree diagrams, concept maps, thematic illustrations, visual organizers, cognitive maps, cognitive organizers, graphic maps and episodic maps (see Appendix A).

Writing Process- A procedure writers use when composing, consisting of the following four steps: prewriting, drafting, revising, and publishing and sharing.

Writing Planner- The page onto which students write down the ideas they intend to use in their writing pieces (see Appendix B).

Writing Complexity- The word length in characters and the sentence length in words were used to determine a grade level for each writing sample. (Bormuth Readability Level)

Writing Architecture- The page onto which students will write their stories. This page is divided into sections for clarity for the students: Title, First Sentence, Middle Sentences, and Ending Sentence (see Appendix C).

Limitations of the Study

If any students had been previously instructed in the use of graphic organizers, they may have had slightly different scores when their writings were analyzed or when their average words per sentence were calculated.

CHAPTER II

Review of the Literature

Purpose

The purpose of this study was to examine the effect of the use of graphic
organizers on the complexity of second grade students' writing.

Importance of "Quality" Writing

All children start their school careers with oral and written language
experiences. Students come to school with differing amounts of life experiences.
Children will succeed in school literacy activities if their reading and writing
activities build on their background of experiences. Adelman (1985) says, "Writing
about their experiences, wishes, dreams, and feelings allows young students to
think and talk on paper" (p. 27).

Writing must be relevant to a child's life. Routman (1988) stresses the
importance of using language with purpose and meaning by children. Routman
views language holistically, not as individual skills to be learned. In her 1991
research, Routman further supports the notion that relevancy is vital to the writing
process. Moreover, students will become engaged in writing and value the process
when the writing process they experience has a connection to their lives. Yates

(1983) believes that writing carries ideas from one person to another, has a distinct purpose and audience, and is based on meaning.

Adams (1996) stressed the importance of frequent practice in writing. In 1990, the U.S. Department of Education reported:

> Unfortunately many schools are unable to give children sufficient instruction in writing. There are various reasons: teachers aren't trained to teach writing skills, writing classes may be too large, it's often difficult to measure writing skills, etc. Study after study shows that students' writings lack clarity, coherence, and organization (p.3).

In support of writing practice, Newman (1990) believes students must be given the opportunity to experiment and take risks in the process of learning to write. Instead of identifying errors, a teacher should focus upon providing positive feedback regarding a student's writings (Adams, 1996). Diederich (1974) submits that any positive feedback, from teachers or peers, results in superior writing results.

The Writing Processes

"The writing process is discovered by doing it" (Finkelstein, 1992, p. 18). Graves (1983) describes the writing process as everything time a person first considers the topic to the moment of c Graves also believes children can learn the components o

through lecture, but they will not fully understand the process until they actually do the writing and make the words fulfill their intentions.

When teaching the writing process, the teacher concentrates on the following five steps, allowing students to be more in charge of their writing: (1) prewriting, (2) writing a first draft, (3) revising, (4) proofreading, and (5) making a final copy to share (Finkelstein, 1992).

Millett (1990) states that research shows that the process writing approach encourages independent thought, cooperation, responsibility, striving for excellence, and pride in achievement. Finkelstein (1992) also notes that these aspects (as noted above) correlate with Benjamin Bloom's Taxonomy of Educational Objectives: "During the five stages of the writing process, students learn to apply all levels of Bloom's Taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation" (p. 20).

The traditional approach towards teaching writing was much more teacher focused. Finkelstein (1992) describes:

> Previously the teacher selected the writer's topic, specified the criteria for success, served as the writer's audience, editor, proofreader, and evaluator. Students were asked to deal successfully with content, organization, sentence structure, stylistic devices, spelling, punctuation, capitalization, grammar and usage, handwriting, and format all at once. (p. 19)

Why Graphic Organizers?

Research on the composition processes of young children supports the relationship between cognitive processing and the ability to write coherent passages. A major problem appears to be in enabling students to independently maintain higher-order thinking skills while composing (Bereiter & Scardamalia, 1987). Evidence has shown that students' main difficulty with content is in gaining access and giving order to the information that they have (Bereiter & Scardamalia). In reference to writing, Robinson and Schraw (1994) maintain that students need to identify important concepts and understand the relations among those concepts in order to see the bigger picture. According to Bormuth (1968), the ability manifests itself in writing because the grammatical structure of a sentence directly affects the grammatical complexity of that sentence. Consequently, modern researchers are investigating measures of grammatical complexity based on the grammatical structures of sentences.

Graves (1979) names instruction in the writing process as the key element of any writing program. Writing instruction takes many forms. One effective method is by helping students to brainstorm and organize their writing ideas through the use of graphic organizers. Ekhaml (1998) summarizes:

> Traditionally, graphs, bars, charts, and diagrams have been used by graphic designers, writers, scientists, and researchers to clarify, communicate, and

persuade. Now the use of graphics has expanded into education for creative problem solving, critical thinking, reading analysis, assessment, and cooperative learning (p.29).

Due to their visual quality, Brown (1988) supports the use of graphic organizers in order to clarify the relationships among concepts and organization of content. Moreover, "With graphic organizers, abstract information can be represented in a visually concrete form giving students the opportunity to elaborate on their ideas (Adams, 1996, p. 17).." Millett (1990) also believes graphic organizers such as webs, semantic maps, inverted triangles, charts, and Venn Diagrams help students choose and explore their topics, collect information, organize material, and establish relationships between ideas. Quist supported the use of graphic organizers in the classroom stating, "First they are visual, second, they can be used across the curriculum, third they are fairly easy for teachers to construct, and fourth students respond favorably to them" (Quist, 1995, p. 6).

Organizational structures can be used for learning across the curriculum for all students. In Langer's review of research (1992), he found support for the idea that the structures and strategies that readers and writers use to organize, remember, and present messages are basically the same for reading and writing, and that these activities are related to both language and cognition. Langer reported that an integral part of reading and writing lies in the focus teachers place

on higher order thinking skills through the use of instructional strategies. These strategies are designed to develop student ability in using graphical structures for learning in all curricular areas, including their writing.

Bean, Lazar, and DeStefano (1992) saw the value in using graphic organizers and state: "We learned that the use of graphic organizers increased student involvement in learning regardless of ability" (p. 2). Although graphic organizers are not a panacea for writers who have difficulty in composing, organizational strategies appear to benefit students of average and below average ability the most. In their research, Bean, Lazar, and DeStefano found that, with ability levels being similar, students who used graphic organizers were able to write at a higher level of topic development as compared with the writings of students who did not use graphic organizers.

Quist (1995) says:

The positive effect of using graphic organizers with learning disabled was sufficient enough to support the theory that: graphic organizers accommodate the learning disabled students need for structure, organization and a clear format, as well as his/her need to relate information to personal experience. (p. 6)

Meyer (1995) supported the use of graphic organizers throughout the four stages of the writing process, stating:

Graphic organizers can help the writer keep to the topic by having their ideas in front of them as they are writing. It also helps the writer to keep things in the correct sequential order. Once students learn how to use

these organizers and see their value, they will hopefully carry this basic idea over for any writing they might have in the future. (p. 2)

Calfee (1991) noted that the development of critical literacy, the ability to use language in various forms as a tool for communication and problem solving, is a primary goal of the elementary school.

CHAPTER III

Design

Purpose

The purpose of this study was to examine the effect of the use of graphic organizers on the complexity of second grade students' writing.

Research Question

Is there a statistically significant difference in the complexity of writings by second-grade students who use graphic organizers as compared to the writings of second-graders who do not use graphic organizers?

Null Hypothesis

There will be no statistically significant difference between the mean of the scores of the students who use graphic organizers and the mean of the scores of the students who do not use graphic organizers in the writing samples of second grade students.

Methodology

Subjects

This study involved 22 students, 12 boys and 10 girls, between the ages of seven and eight from a rural western New York school district. Participants were from the same regular education second grade classroom. The student population was primarily white and spoke English as their first language. There were two students who received mandated ESL services, however, none of the students had any educational modification plans. One student was repeating second grade for the first time. The researcher served as the classroom teacher for all student participants.

Materials/Instruments

The writing topics for this study were selected by the participants. Each student used a planner page and a writing architecture page for each writing assignment. Students in the experimental groups also used a teacher-created graphic organizer. All students had used graphic organizers on at least two previous writing activities.

Procedures

A counterbalance design was used in this study. All participants were asked to complete two writing assignments. Each writing activity was completed, in totality, within a two-week period. The writing assignments took place consecutively.

All 22 students worked in the same classroom at their desks and at the same time. Students were told by the researcher that all participants would be writing about the topic of their choice to share with the class later. However, some students used a graphic organizer in the first writing assignment and some used a graphic organizer to help them write in the second writing assignment.

In Writing Assignment #1, 12 students were randomly selected to use a graphic organizer in addition to their writing planners. In Writing Assignment #2, the students who were not randomly selected in Writing Assignment #1 used the graphic organizers in addition to their planners. Those students who used graphic organizers in the first assignment did not use graphic organizers in the second writing assignment.

All students were told the writing requirements. Stories were to be at least four sentences in length, in addition to the first and ending sentences. Stories also were to have a title written at the top. Students were reminded to use

capitalization and punctuation rules appropriately. Students were also reminded to use the class created "Good Writing Rule- Think it. Say it. Write it. Read it," in the two writing assignments. The two writing assignments were entitled, "I'd Like to Share... ." The writing procedure for each assignment took place as written below.

Writing Procedures-Control Group

Students in the control group created a planner on their planner page. All students individually edited their planners for spelling errors with their teacher. Once this had been done students wrote their story using only their planners. These first drafts were edited by the student and the researcher for spelling errors. Every effort was made to leave word selections and sentence structures to the discretion of each student. Students then wrote their final copy and submitted it to the researcher when it was completed.

Writing Procedures-Experimental Group

Students in the experimental group created a planner on their planner page. All students individually edited their planners for spelling errors with their teacher. Students wrote on a blank graphic organizer, prepared by the teacher, to organize the ideas written on their planners. Once this was done students wrote their story

using their graphic organizers. These first drafts were edited by the student and the researcher for spelling errors. Every effort was made to leave word selections and sentence structures to the discretion of each student. Students then wrote their final copy and submitted it to the researcher when it was completed.

Analysis of Data

The writing samples were assessed using Microsoft Word's Readability Statistics computer program. Each writing sample was entered by the researcher as data into the computer and then analyzed to determine the Bormuth Grade Level. Once the data was analyzed for grade level complexity a t test was used to determine if there was a statistically significant difference in the complexity of writings between the two groups.

CHAPTER IV

Analysis of Data

Purpose

The purpose of this study was to examine the effect of the use of graphic organizers on the complexity of second grade students' writing.

Null Hypothesis

There will be no statistically significant difference between the mean of the scores of the students who use graphic organizers and the mean of the scores of the students who do not use graphic organizers in the writing samples of second grade students.

Analysis of Data

A correlated t test (dependent means) for the difference between the two means was used to compare the mean score of the stories written using a graphic organizer and the mean score of those writing samples written without the aid of a graphic organizer. A calculated t score of .2056 was obtained. Since the critical value of t for 21 degrees of freedom at the 95% confidence value is $\pm$ 2.080 and since the t obtained was .2056 the null hypothesis is retained.

Table 1

t Test of Differences between the Two Mean Scores

Writing Condition	df	$\bar{x}$	s.d.	t
Graphic Organizer	21	6.85	.4961	
Without Graphic Organizer	21	6.73	.4454	.2056

Crit t = ± 2.080; p< .05

Having determined that there was no statistically significant difference (p<.05) between the means scores of the graphic organizer group and the mean scores of the stories written without the aid of graphic organizers, the null hypothesis is retained. There is no statistically significant mean score difference between the graphic organizer group scores and the group of stories written without using graphic organizers analyzed using the Bormuth Grade Level formula.

Other Observations

Although significant gains in complexity were not made in conjunction with the graphic organizers, the researcher felt that graphic organizer samples contained more descriptive information. In many examples, students were able to explain the significance of a gift they received by describing who gave it, when it was given, where it was from, how much it cost, what it looked like, and why it was given. The sentences in samples written using graphic organizers tended to flow more fluidly, as one would speak in conversation. Since the graphic organizers used by the students contained small lines, students wrote more specifically, using individual words that would describe the nouns included in their writings. Many writing samples written without graphic organizers tended to have disjointed thoughts strung together, almost as if written with no forethought by the student. These sentences were more focused on the nouns in the sentences and their corresponding verbs.

An interesting yet suspected finding of this study was that students wrote almost an entire word (.8) more per sentence when creating stories from developed graphic organizers. More specifically, 15 of the 22 participants wrote an average of .823 words more per sentence when using a graphic organizer. When graphic organizer stories were created there tended to be more words written on the page than when students wrote stories just using the writing planners (see Table 2).

Table 2

Comparison Data on the Two Treatments

Subject #	Borm. Grade Lev. w/o Graph. Org.	# of Words per sent.	Borm. Grade Lev. w/ Graph. Org.	# of Words per sent.
1	6.3	4.3	7.5	5.6 (+1.3)*
2	6.3	6.6	6.3	9.1 (+2.5)
3	6.6	4.6	6.6	6.6 (+2.0)
4	6.9	7.3	7.1	10.7 (+3.4)
5	6.9	5.5	6.6	7.1 (+1.6)
6	6.9	7.3	7.5	8.6 (+1.3)
7	6.3	4.8	6.8	7.5 (+2.7)
8	6.6	8.1 (+0.5)	6.6	7.6
9	6.9	5.0	6.6	5.2 (+0.2)
10	6.3	5.7	6.6	7.7 (+2.0)
11	6.6	5.4	7.1	11.4 (+6.0)
12	8.2	8.6 (+1.0)	8.2	7.6
13	7.5	8.3 (+3.0)	7.2	5.3
14	6.9	7.6 (+2.6)	6.6	5.0
15	6.9	3.4	6.3	3.8 (+0.4)
16	6.3	5.1	6.6	5.2 (+0.1)
17	6.3	4.1	6.3	4.9 (+0.8)
18	6.6	6.3	6.9	6.8 (+0.5)
19	6.6	5.4 (+0.3)	7.2	5.1
20	6.9	5.1	6.3	6.6 (+1.5)
21	6.9	5.9 (+0.7)	7.5	5.2
22	6.3	4.9 (+0.1)	6.3	4.8
x	**6.73**	**5.87 (+1.17)**	**6.85**	**6.70 (+.82)**

* Numbers in parentheses indicate the average number of words per sentence

increase students wrote for that writing sample versus the other writing sample.

CHAPTER V

Conclusions and Implications

Purpose

The purpose of this study was to examine the effect of the use of graphic organizers on the complexity of second grade students' writing.

Conclusions

The results of this study into the effect of graphic organizers on students' writing do not reflect what the researcher found in much of the research on graphic organizers. Still, there is a small average increase of .12 grade levels in the complexity of student writings when comparing the graphic organizer writings to the writings not written with graphic organizers.

Much effort was made in modeling, practicing, and reviewing correct sentence formation with all participants in the study. The researcher discovered during the course of the study that the students in the experimental group tended to exhibit an addressed behavior in their writings. Some students samples contained many run-on sentences with strings of dependent clauses attached to the end of well written sentences. Undoubtedly, these students thought they were completing the assignment correctly, but did not stop to review what they had

written. Graphic organizers may have been responsible for these behaviors because of the nature of graphic organizers and the writing assignment. Students may have felt obliged to use all words on the graphic organizer in order to complete the assignment.

When students wrote their second writing sample, there did not seem to be any noticeable increase in the complexity for the control or for the experimental group for this study. In the control group, five students' writings increased in complexity, three stayed the same, while two decreased. In the experimental group four students' writings increased in complexity, three stayed the same, while five decreased. In summary, the complexity in 13 students' writings (59%) decreased or stayed the same from the first to the second writing sample. Graphic organizers did not appear to have an anticipated effect. The order in which the graphic organizer was utilized did not appear to have an anticipated effect either. In addition, from the data in Table 2, graphic organizers appeared to be beneficial in that at least 68% of the writing samples prepared with graphic organizers contained more words per sentence than samples that were not prepared using graphic organizers. These areas deserve further research.

Graphic organizers did not appear to negatively affect the quality of student writings in this study. Students did not exhibit any apprehension or disinclination towards physically writing when using graphic organizers.

Another observed behavior during the course of the study was the lack of interest in making a graphic organizer. Some students in both phases of the study required much encouragement to finish creating their graphic organizers. Although topics were generated by the students, preparing to write about them for this study was seen as a tedious exercise. Therefore, although graphic organizers do not appear harmful to the quality of student writings, graphic organizers do not appear to motivate students to take a great interest in independent writing activity.

There were other advantages in using graphic organizers that could not be measured by the factors of the Bormuth formula. For example, the use of graphic organizers allowed students to create more specific noun modifiers. The graphic organizers also provided a specific plan of attack for composing written assignments.

During the course of the study, it appeared to the researcher that although writing instruction was given beforehand, some students were still unable to complete their thoughts in correct sentence formation on paper. Original sentence construction appeared to be a skill some students were not developmentally ready to successfully undertake. It appears that second grade students would have benefited from more direct instruction in sentence formation using graphic organizers. However, it remains to be seen if this is the case, as this researcher found scant research involving second-graders and writing composition.

Implications for the Classroom

Practice. Practice. Practice. Students who are given the opportunity to write will write more and more. With guided instruction they will become even better writers. Modeling and shared writing provide examples for beginning writers to look up to and imitate. However, students will eventually create their own writing styles based on their experiences, literary and real world. Teachers and parents can provide students with a strategy to help students organize their thoughts before they write so that their writings are of a higher quality. They can say things more effectively and accurately. Teachers can help them to rise above a simplistic way of writing. This ongoing process can be practiced through the use of graphic organizers.

Graphic organizers should be implemented slowly in the classroom writing environment. As was seen in this study, time must be first spent listening to, speaking, writing, and reading well constructed sentences. It is imperative that students know what a good sentence *is* and what a good sentence *is not*.

Modeling using graphic organizers is important. To be able to show students how writing can be more interesting provides an impetus and motivation for beginning writers to strive towards reaching. Teachers can begin by using simpler graphic organizer with their students. Over time they can work their way

into using larger more complex ones. Narrative, expository, and personal writing are all appropriate opportunities to show students how graphic organizers can be applied effectively in most curricular areas. It is a powerful strategy to use with students of all ages and ability including second graders as one alternative form of writing instruction.

Implications for Research

Further investigations into the use of graphic organizers as a means to develop children's writings are suggested. Research in the following areas are needed:

1. Once children understand how graphic organizers work, do they begin to think more conceptually? What effect if any does this have on further writing endeavors?

2. Is there an age at which graphic organizers should be implemented so as to maximize students' concepts of the writing process? Are graphic organizers more concrete or abstract for students?

3. Does the number of words per sentence or length of writing samples have a significant role in the complexity of students' writings?

4. Is there one type of graphic organizer that students respond to better than others?

5. How often should graphic organizers be used by students when writing?

For further study, the following changes in the study are recommended:

1. A larger sample size of at least 30 for both the experimental and the control group should be used.

2. Do not use the counterbalance design. It most likely has immeasurable effects on the students.

3. Use different age levels or grade levels for cohort studies.

4. Analyze the same data using a different readability formula such as the Dale-Chall, Flesch, Fry, or Spache formulas. Or, one could do a holistic scoring of the two samples, or use a test of syntactic complexity.

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Appendices
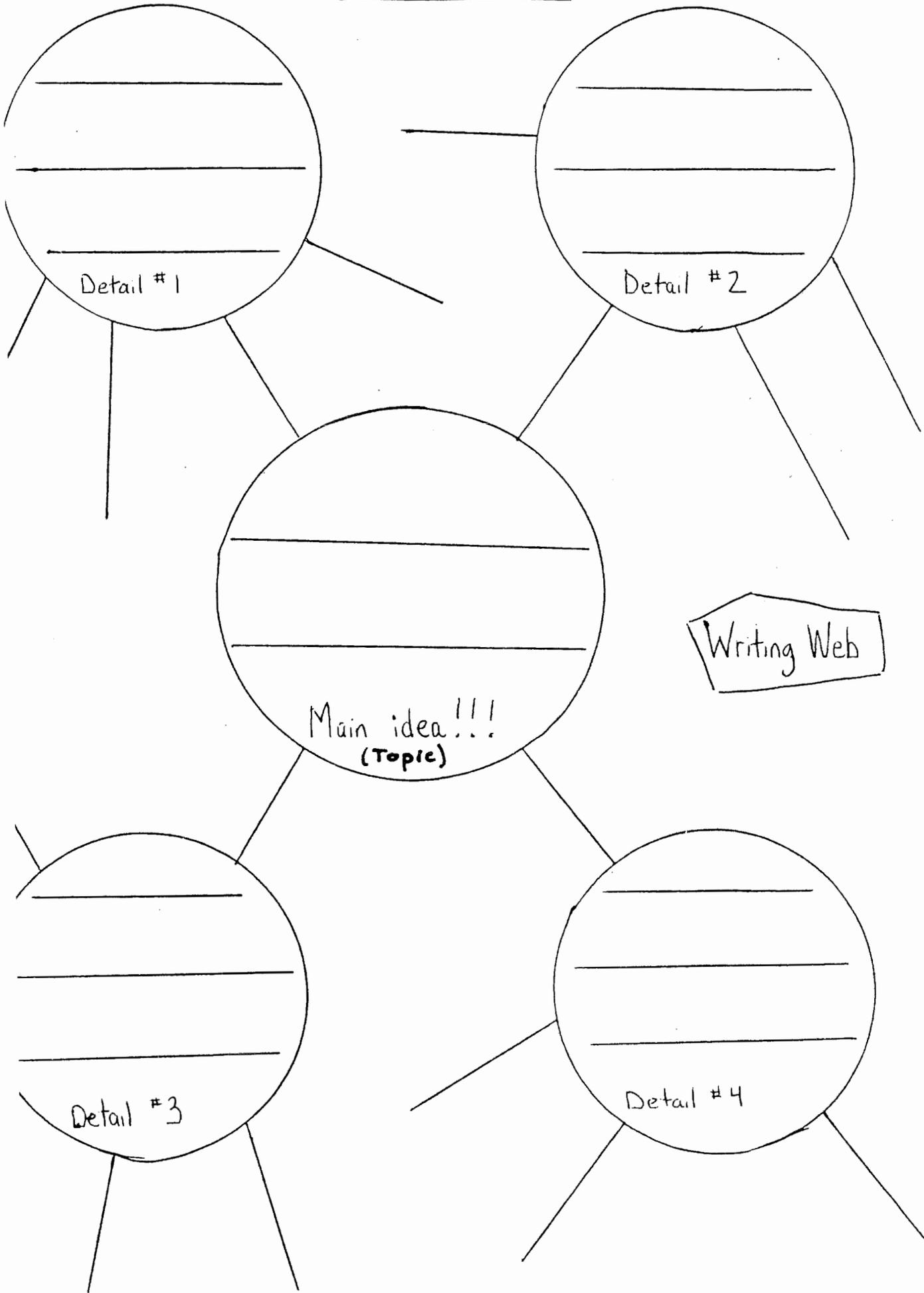
Detail #1

Detail #2

Main idea!!!
(Topic)

Writing Web

Detail #3

Detail #4

Writing Planner

Name:

:)

Ideas I could include in my writing:

11.

12.

13.

14.

15.

16.

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18.

19.

20.

Sentence:

e Sentences:

Sentence :