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The Effects of Teaching Nonfiction Text Structure Reading Strategies and Thinking Maps on Writing Quality in Sixth-Grade ELA and Science Students

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The Effects of Teaching Nonfiction Text Structure Reading Strategies and Thinking Maps on Writing Quality in Sixth-Grade ELA and Science Students

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The Effects of Teaching Nonfiction Text Structure Reading Strategies and Thinking
Maps on Writing Quality in sixth-grade ELA and Science Students

Abstract

The purpose of this action research study is to examine the use of nonfiction text

structures (i.e. mentor texts, signal words, and thinking maps) in both English language

arts (ELA) and science classes to evaluate the comprehension of topics and concepts

through student writing samples. The researchers used multiple data sources to better

understand how the instruction of nonfiction text structures affects the ability of

sixth-grade students to express their comprehension through writing. Confidential pre-

and post-feedback forms were used to gauge student perceptions of writing improvement

and comprehension. Each teacher also conducted confidential student conferences twice

during the study and used a common rubric to assess writing samples. The researchers

triangulated data to investigate the effects on students' writing skills, their perception of

those skills, and the instruction of writing for/in various classes. Following the analysis of

data for meaningful trends, the researchers found that interdisciplinary writing instruction

was best supported when teachers collaboratively create and implement common

strategies and assessments.

Keywords: text structures, writing instruction, interdisciplinary

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Communication is an essential part of everyday life. Humans communicate with one another through many forms including music, dance, and art. However, the most common forms of communication are through speech and text. Communication through text was a privilege held by a select few for centuries; it is only in the last few hundred years that we as a society have agreed upon the importance of text literacy for all people. Being able to both comprehend and compose through written text is a skill that many possess, but few master.

School is a place to introduce and nurture communication, but deficits in quality of writing have been observed in students over the last decade. Researchers De La Paz and Graham (2002), have identified that only 25% of American students are considered proficient writers at their current grade level. This is particularly unsettling because there have been studies that link effective writing to overall student success in both middle and high school (Reynolds, 2009). This issue is amplified by the assumption that writing is a skill that should only be directly taught in one subject area, traditionally the English language arts (ELA) classroom. The lack of writing instruction in other content areas leaves students without the tools needed to express their understanding of the content. If the whole of writing instruction is saddled with the ELA teacher, another issue arises because of high stakes reading tests that impact the funding of schools. Consequently, the main focus of ELA class becomes reading comprehension thus leaving communications skills as a secondary priority.

If effective student writing is a skill that all teachers want to nurture, it is important that students have an authentic reason to write and a clear audience to address

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(Corker & Lewis, 2008; Franks, 2001). It is also important that the instruction of writing is directly addressed by each content instructor. Nonfiction text structures, including cause and effect, sequential order, description, compare and contrast, and problem/solution, are concepts that can be taught and reinforced in any content area to bolster literacy skills. The use of mentor texts, signal words, and thinking maps to teach nonfiction text structures enables students to better express their understanding of concepts through writing across content areas. Ultimately, these instructional techniques improve students' communication skills.

Statement of the Problem

Communication through text is a skill that many have, but the ability to clearly articulate thoughts and ideas is difficult; especially for school-age children. Across academic subject areas, students struggle to clearly and accurately express their comprehension of content through writing. This gap is the result of the expectation from instructors that an ELA teacher can teach every type of writing style needed to succeed in multiple classes with varying writing requirements. Other content teachers are apprehensive to tackle the topic of content specific writing due to inadequate training from their universities and lack of professional development provided by their employers. A possible solution to better prepare students as writers would be for content teachers to work with ELA instructors to have common strategies and approaches for writing that cover basic universal skills. The lack of a direct, cross-curricular approach to writing perpetuates this issue and does a disservice to students as they are passed along through the educational system. Therefore, the purpose of this action research study is to examine

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the use of nonfiction text structures in both ELA and science class to evaluate the comprehension of topics and concepts through student writing samples.

Review of Literature

This literature review explores concepts related to writing instruction in middle schools including students' lack of skills, a lack of teacher preparedness, the importance of writing instruction, and current techniques for writing instruction. The instructional practices highlighted in this literature review are relevant to cross curricular instruction. The literature points to the use of mentor texts as models for student writing, graphic organizers as a planning tool, and nonfiction text structures as strategies for effectively communicating ideas.

Writing Capabilities of Secondary Students

Throughout the literature, researchers have identified a theme of underperformance in academic writing in school-age children. According to De La Paz and Graham (2002), only 25% of American students are considered proficient writers at their current grade level. As students transition into middle school and high school, the ability to effectively write directly impacts their overall success (Reynolds & Perin, 2009). Ray, Graham, Houston and Harris (2016) observed that most science writing is mostly expository while English writing provides a variety of authoring opportunities. However, amongst all curricular areas there is a constant theme of shortcomings in all writing forms in the literature (Coker & Lewis, 2008). These issues are not only prevalent in the secondary setting, but are also occurring in higher education and general employment areas as stated by the Southern Regional Education Board (Graham, Early,

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& Wilcox, 2014). Writing issues are a worrying trend in American education due to the

necessity of both reading and writing in all curricular courses and the limited amount of

direct instruction of writing in the various classrooms.

Teacher Training on Writing Instruction and Interventions

Even though educators across content areas are aware of the writing inadequacies

of students, very little is being done to correct the issue outside of the English language

arts classroom (Gabriel & Dostal, 2015). Teachers are under constant pressure to ensure

that students can meet specific standards dictated by their state, district, federal

government or a combination of the three (Baker et al., 2008). It is difficult for an

instructor to justify setting aside some class time to explicitly teach their content writing

style expectations to students and to ensure that all students are proficient in these

expectations (Baker et al., 2008; Gabriel & Dostal, 2015). Ray, Graham, Houston and

Harris (2016) identified that the most common approaches for writing in classrooms (i.e.

short answers to questions, note taking for reading, note taking while listening, and

completing worksheets) do not require students to think deeply about the material they

are asked to learn. In addition to this observation, Ray et al. (2016) suggested that a

reason for this approach might be the result of minimal formal training in teacher

programs and few opportunities for professional development once employed by a

school. These result in ill-preparation of teachers to support students' learning through

writing.

If students are to reach a deeper level of understanding through writing, they must

frequently write in all of their classes. A National Commission on Writing officially

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recommended that the amount of writing in schools should double if students are to be considered college-ready after graduation (Applebee & Langer, 2009). Applebee (2009) later identified that ELA classes, the content area which all other teachers expect the most writing to be taught and done by students, severely lacks in explicit instruction. Often assignments are shorter than recommended by the common core and lack discipline specific arguments and evidence (Applebee, 2011).

For writing to be impactful for students, it must be authentic both to them as the author and to their readers (Franks, 2001). Coker and Lewis (2008) suggest that students are rarely required to write with a real purpose and to a real audience. They also suggest that writing must have a variety of contexts, be written for many different types of audiences, and advocate for teachers to be trained in the skills and strategies to accomplish these goals (Coker & Lewis, 2008). Indeed, colleges and professional institutions should be helping educators enrich their pedagogy but sadly, this is not the case as 98.8% of surveyed teachers reported using their own time outside of the school day to try to learn how to use writing to support student learning (Ray et al., 2016).

The Importance of Developing Writing Skills

Students need to be able to write about what they read to achieve academic success across content areas (Reynolds & Perin, 2009). When students understand what they read, they are better able to produce writing that reflects their understanding (Montelongo & Herter, 2010). Students need to be able to synthesize content from multiple texts, to do this effectively there are many literacy concepts students need to understand, including the knowledge of nonfiction text structures and summarization

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rules (Reynolds & Perin, 2009). Reading high-quality nonfiction materials helps students better understand how text is structured (Reynolds & Perin, 2009; Sanders & Moudy, 2008). Reading nonfiction also helps students build literacy skills necessary for efficient writing including critical thinking and the consideration of multiple perspectives (Hodges & Matthews, 2017). Additionally, the teaching of summarization rules can, in turn, increase reading comprehension (Reynolds & Perin, 2009).

The ability to express one's understanding clearly through writing is a foundational skill that leads to academic success across content areas. In a survey of middle school writing instruction across the United States, Ray et al. (2016) cited three meta-analyses supporting the assertion that writing strengthens learning. Since academic knowledge is established through informational texts, it is integral to focus on reading and writing in various content areas (Montelongo & Herter, 2010). The process of writing not only helps students communicate their current understanding of content but also facilitates the development of new ideas (Baker et al., 2008). Teachers must implement writing instruction in science classrooms to foster the skills of critical thinking and challenge misconceptions which are subsequently transferrable to writing tasks in other content areas (Baker et al., 2008; Montelongo & Herter, 2010). Teachers should take this into consideration because writing helps students develop many needed skills such as explicitness, synthesis, reflection, and paraphrasing (Ray et al., 2016). These are good skills for middle schoolers to work on since students need a solid foundation of writing to achieve success at the postsecondary level (Coker & Lewis, 2008). As students transition from middle school to high school to university, the importance of

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writing instruction becomes a matter of graduation as students with weak literacy skills are more likely to drop out than their peers with more skills (Graham, Early, & Wilcox, 2014).

Students' writing quality is, in part, affected by the way they structure their ideas. The structure of the text can be seen as two different levels, sentence level, and paragraph level as explained by Englert, Stewart, and Hiebert (1988) in their analysis of text structure in student writing. They went on to note that sentence level structures help writers connect details and display their interrelationships, while paragraph level structures convey larger ideas within a text. The focus of writing instruction is often centered on the process of writing that moves students from planning stages through the organization of their ideas. This focus leaves behind the instruction of sentence level structures that improve student writing (Beers & Nagy, 2009). While sentence complexity allows writers to be more concise, sentence variety can be more critical as a mix of simple and complex sentence structures can improve the flow of a text (Beers & Nagy, 2009). Varied sentence complexity is necessary but not sufficient in quality writing, as skilled writers focus on many aspects of their writing including grammar, organization, and considerations of their potential audience (Beers & Nagy, 2009; Coker & Lewis, 2008).

Current Approaches to Writing Instruction

There is no shortage of writing instruction techniques and strategies. Discussed below are strategies that align with the aforementioned theories of writing instruction and

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the goal of interdisciplinary implementation. This section examines some of the current strategies that are being used and are commonly referenced throughout the literature.

        Lesson Cycles. Researchers seem to have a common theme in their approaches to writing. Either overtly or subtly, they have students participate in some form of a cycle that supports a writing process (De La Paz & Graham, 2002; Gabriel & Dostal, 2015; Reynolds & Perin, 2009). Montelongo, Herter, Asaldo and Hatter (2010) had an extremely well-documented system that ran for five weeks and saw average gains in improvement in writing and text identification for both sixth and seventh graders. The cycle consisted of four parts:

1. Vocabulary Teaching

2. Text Structures

3. Modified Sentence Completion

4. Rewriting Text

While at a glance, this may appear to be a traditional approach, the researchers went to extra lengths to ensure that students were forced to think critically about the text that they were reading and plan a writing strategy that included structure and evidence/claims. This approach is what many researchers have identified as lacking in current instruction (De La Paz & Graham, 2002; Montelongo et al., 2010; Ray et al. 2016).

        The vocabulary portion goes deeper than flash cards by having students infer the meaning of the words through context. The strategy then has students take their inference and compare to the real definition and make any changes that are required. The assessment of vocabulary goes beyond a simple matching or multiple choice question and

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is instead a writing activity that assesses how well students can use the words in context (Montelongo et al. 2010).

The second step, text structure instruction, is more traditional because of its formal presentation to students as a lecture. Students then complete simple tasks to identify supporting details to confirm the correct text structure in several sample texts (Montelongo et al., 2010).

The third task, modified sentence completion, is where students start to work on their writing skills. They start with a traditional idea of a fill-in-the-blanks worksheet, but instead of putting in simple words students are required to think critically about the possible answers. The 10–12 sentences contain related material and together form a cohesive expository paragraph. The remaining sentences are distractors and are meant to serve as foils. Students must complete each sentence with a correct vocabulary word and then attempt to find related sentences that create a cohesive paragraph. Once they have identified the sentences that correctly make up the paragraph, they pick out which one best represents the main idea. Finally, they arrange them in a graphic organizer that is used in the final step.

The fourth step in the cycle is where students summarize what they have read using their graphic organizer as a guide. The summation is graded using a rubric that accounts for various levels of complexity that demonstrate comprehension and mastery.

This specific four-step process can be used across curriculums and across grade levels which makes it attractive, but the study had a relatively small sample size (n=61) and and was conducted on a remedial group of students during a summer school program.

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The small sample size and the highly specific group brings into question how practical this approach would be in a general education classroom (Montelongo et al. 2010).

The Use of Mentor Texts. The term mentor text describes any book, passage, or article a teacher introduces as an exemplar to students to model specific aspects of composition (Hodges & Matthews, 2017). Students can improve their writing skills by observing composition strategies and structures used in mentor texts (VanDeweghe, 2008). While outlining a step by step process of teaching the use of text structures in writing, Hodges and Matthews (2017) explained that teacher think alouds with mentor texts model the identification of essential text components. In their description of a similar set of instructional practices, Sanders and Moudy (2008) further explain that modeling with mentor texts facilitates the practice of finding and identifying various text structures. This use of mentor texts helps students recognize organizational patterns of text and in turn enables them to use the same structures in their writing (Hodges & Matthews, 2017). Additionally, after studying mentor texts as exemplars, students are better equipped to support their ideas with logical reasoning and evidence (Hodges & Matthews, 2017).

Graphic Organizers. Traditionally, teachers train their students to look for items like titles, headings and subheadings in textbooks to help them identify main ideas and topics (Lorch & Lorch, 1996). This technique alone can be problematic because not all texts adhere to such a strict format (Montelongo et al., 2010). For a student to write coherently about a concept, idea or text, they must be able to efficiently plan their approach, and unfortunately, planning is a step often skipped by students and not taught

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efficiently by educators (De La Paz & Graham, 2002; McCutchen, 1995; Scardamalia & Bereiter, 1986). A graphic organizer is a method by which students can visually organize textual information and plan out their writing. A graphic organizer can be used in conjunction with text structure instruction to help students identify main ideas and their supporting details (Hodges & Matthews, 2017). In this way, it can be used both as an analysis tool and staging area for student text generation (Montelongo & Herter, 2010). Regularly using a graphic organizer helps students to recognize textual patterns and the visual aspect of the organizer aids in recollection of information. This prepares students for critiquing and analyzing information when they create an original text that uses a similar structure (Hodges & Matthews, 2017; Montelongo & Herter, 2010). Graphic organizers have been used by a variety of students and shown promising results, from elementary children reading and writing about picture books (Hodges & Matthews, 2017) to undergraduate college students (Reynolds & Perin, 2009).

Nonfiction Text Structures. There are six commonly agreed upon text structures, including: descriptive, compare-and-contrast, cause-and-effect, sequential, problem-and-solution, and question-and-answer (Hodges & Matthews, 2017; Sanders & Moudy, 2008). Through the instructional practices mentioned above, Hodges and Matthews (2017) suggested engaging students in writing with text structures only after they have learned to identify structures in mentor texts and efficiently use graphic organizers to communicate the various relationships. During the stages of identifying text structures in mentor texts, Hodges and Matthews (2017) explained that students need to develop an understanding that text structures can exist at both the sentence level and

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paragraph level. Once a conceptual understanding of text structures has developed students should start to apply the techniques in their writing practice (Hodges & Matthews, 2017). Sanders and Moudy (2008) used a similar set of practices to guide preservice teachers in their acquisition of text structure knowledge through middle-level mentor texts. By going through the process of identifying and analyzing the structures used in mentor texts, the preservice teachers noted a better understanding of how writers organize nonfiction texts and use different techniques to communicate different types of information. Furthermore, Sanders & Moudy (2008) concluded that the next step in research is to apply these instructional strategies with students in elementary and middle schools. With an assertion that nonfiction writing aptitude relies on text structure knowledge, Englert et al. (1988) studied the ability of third and sixth-graders to use text structures at both the paragraph and sentence level. Through their analysis of writing from 123 students, they found that, while the grasp of nonfiction text structures improved from third to sixth-grade, sixth-graders still lacked adequate skills. Based on the analysis of two writing tasks, less than a third of sixth-grade students met minimal standards (Englert et al., 1988). The authors suggested that a lack of awareness of text structure affected students' competencies in organizing and structuring their writing.

Based on our review of the literature we will focus our research on the instruction of nonfiction text structures. We will model the identification of text structures with mentor texts. As students gain an awareness of text structures, they will use graphic organizers to organize the ideas in the examples found in their reading. Students will then use the graphic organizers to plan the content and organization of text structures in

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their writing. These instructional techniques might result in students' improved ability to express their ideas through writing. They will better understand how writers use various text structures to organize content and will implement these techniques in their writing (Hodges & Matthews, 2017).

Methodology

This endeavor was designed as a classroom action research project to better understand the effectiveness of writing pedagogy in ELA and science classrooms. The researchers used multiple data sources to better understand how the instruction of nonfiction text structures affects the ability of sixth-grade students to express their comprehension through writing. Confidential pre- and post-feedback forms were used to gauge student and parent perceptions of writing improvement and comprehension. Each teacher also conducted confidential student conferences twice during the study and used a common rubric to assess writing samples.

The population for this action research study included sixth-grade middle school students in a midwestern suburb who had both mainstream ELA and science classes as shown in table 1. The percent of students at this school receiving free and reduced lunch was 63%. The racial demographics of the school included 26% Asian, 37% Black, 10% Hispanic/Latino, 19% White and 9% identified as two or more races. The study included a population of 21 male and 27 female students of diverse ethnic and linguistic backgrounds including English learners and students with Individualized Education Programs (IEPs). The sample was representative of the middle school population and included students from two ELA sections who shared the same science instructor.

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Researchers also sought input from the parents and guardians of students participating in the study.

Table 1
Student Demographics for two ELA and science classes

Class Population	
Male	14
Female	25
SPED	2
ELL	6
Black	15
White	14
Asian	9
Hispanic	1

These are students that are shared between instructors and had available data for pre and post assessments. Actual class samples had higher populations but some students were excluded due to opting out of the study and failing to complete required assessments promptly.

Parents and guardians were presented with a feedback form at the start of the study to gather information related to their perception of their students' writing capability and to assess the guardians' perspective about how important writing is as a skill for their student. Students involved in the study were also given feedback forms at both the start and end of the study to see if their perceptions of their writing ability changed. During the study, two student writing samples from the ELA and science classes were gathered and assessed using a common rubric. The rubric was created to assess the students' summary compositions to see if the use of signal words and text structures aided in the overall clarity of their writing. After the gathering of each sample, the researchers took volunteers and conducted student conferences to see how students connected the use of a

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graphic organizer to their writing as well as to better understand how students intentionally included text structures to organize their writing.

Direct instruction was withheld until initial feedback on writing perceptions was gathered from both student participants and their guardians. To introduce the concept of nonfiction text structures to students, the ELA teacher provided definitions, examples, signal words, and corresponding graphic organizers. Next, the ELA teacher used a mentor text to help students identify the text structure type. Then, the teacher scaffolded how to outline the mentor text using a graphic organizer. Next, students found text structures in their reading and organized the main points and concepts using a graphic organizer. Finally, students used their completed graphic organizer to summarize their understanding of the content and text structures in their writing.

In science, the teacher used GIF images as mentor texts to show the application of Newton's Laws through cause and effect instead of mentor texts (Appendix A). Each day a new GIF was presented to the class to add to their notebook, and the teacher allowed time for small group discussion before using a think-aloud strategy with the whole class. The teacher guided students through a thinking map, calling for answers along the way and showed how to use the map as a guide to select signal words for the final summary. This method of direct instruction was done for the first three mentor images in preparation for a gradual release of independent work. After note taking was completed, students spent a week in lab completing hands-on activities that demonstrate Newton's first law and wrote summaries for each station (Samples shown in Appendix B). Before getting into the laboratory stations, the teacher put a GIF on the board and had student

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groups discuss the images, create thinking maps and write summaries to show cause and effect. After finishing Newton's first law, a similar approach was used for Newton's second law (Appendix C), but more time was allowed for cooperation and collaboration of thinking maps and summaries.

During these cycles, students had homework assignments that mirrored the methods used during the in-class notes and discussion portions of the lesson (Appendix D). They received direct feedback on their homework from the teacher, and if they turned it in early enough, they had the opportunity to revise and improve their score. At the end of each cycle, there was a quiz that consisted of a short essay question that required students to write a summary showing the cause and effect of Newton's law in a GIF (Appendix E). For the first quiz, students were given the option to create a thinking map before writing a summary, but during the second quiz, students were required to do a thinking map before handing in their quiz.

Both the ELA and science teacher assessed samples of work from two separate assignments using a common rubric. ELA used two nonfiction readings and science used two GIFs. Following the assessment of each assignment, the researchers had a conference with four students, randomly selected by convenience, to better understand the students' use of writing strategies. After all data collection was complete, the students gave feedback using the same feedback form used before the writing instruction. The researchers reviewed the data to identify trends and patterns that reflected the overall effectiveness of the instruction. Student feedback data from the end of the study was also compared to that of the beginning. The researchers looked for student growth in

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individual rubric categories as well as the overall score to gauge the effectiveness of the instruction strategies.

Analysis of Data

The researchers asked parents and guardians to complete a short feedback form (Appendix F) to gauge their perception of writing instruction and the quality of their students' writing. The guardian feedback form was presented both as a paper copy and as a Google Form. Due to only receiving two responses to this form, there was not enough data for valuable analysis.

Before and following implementation of the instructional techniques, students completed a Google Form (Appendix G) to provide feedback about how they saw themselves as writers, their perception of writing instruction in school, and use of the writing process. Researchers used the form to collect baseline data and again to determine results.

Responses from the final student feedback form were compared with those from the initial form to analyze data and reveal trends. For each question, the total number of responses for each answer was totaled and compared. The first set of three questions was analyzed to determine any changes in confidence and perception of their writing skills. The second set of five questions was analyzed to reveal their view of writing instruction across content areas. The final set of five questions was analyzed to seek insight into how students use the writing process. The final three questions of this section were not compared to the initial student feedback form because they specifically focus on the strategies being studied of which students had no prior knowledge. Additionally, one

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open-ended question was included to gather information about how students experienced writing differently across content areas. This open-ended question was analyzed to determine any trends or themes in the responses.

Together, researchers created a common rubric (Appendix H) using a four-point scale (1 thru 4) and four criteria (clarity, comprehension, syntax and signal word use). To assess the validity of the rubric, each researcher independently assessed student work from the other's class. Scores for the student work were then compared and, a one-point margin of difference was consistently observed. After debriefing collaboratively each criteria score, it was determined that the rubric could be used across content areas effectively.

Scores for all assignments were placed into a Google Sheet for analysis. The research team determined three performance ranges for the analysis of rubric criteria scores. These ranges were created using the one point difference between content areas and adjusting for practical testing variation. For rubric scores, significantly decreased performance was defined as a decrease of at least two points. The neutral performance was a range of a single point reduction or increase. The significantly increased performance was defined as growth of two or more points. Each value was calculated by taking the difference in score of the final and initial assessments. When analyzing students' overall growth as a category, a larger performance range was used because the total number of points included the sum of all four criteria. Significant decrease was defined as a drop of three or more points. Neutral growth was defined as a range of a

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two-point loss or gain, and significant growth was defined as an increase of three or more

points.

Following each assignment assessed with the common rubric, four random

students who were selected by convenience participated in a conference with the teacher.

During these conferences, the teachers asked a set of five questions (Appendix I) to gain

insight into how students used the targeted writing techniques. Together, the two

researchers compiled and analyzed the responses to the questions and identified key

words used by students to call out recurring themes. Responses that were identical,

synonymous or expressed similar points of view were group together and tallied. It is

important to note that a single student's response to a question could have been counted

in multiple themes. This measure of common frequency is what the reachers analyzed

and reported out.

Reporting Findings

The purpose of this study was to explore the effects of interdisciplinary nonfiction

text structure instruction on student writing. Using varied sources, the researchers

triangulated data to investigate the effects on students' writing skills, their perception of

those skills, and the instruction of writing for/in various classes. These areas were

assessed using student feedback forms, writing samples, and student conferences.

Self Perception of Writing Skills

As shown in figure 1, question two showed a positive increase in the strongly

agree category while question three showed an increase in the agree statement but a

decrease in the strongly agree statement. The percentage of overall positive responses

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compiled from questions 1-3 (Figure 1), which focus on confidence in writing, went from

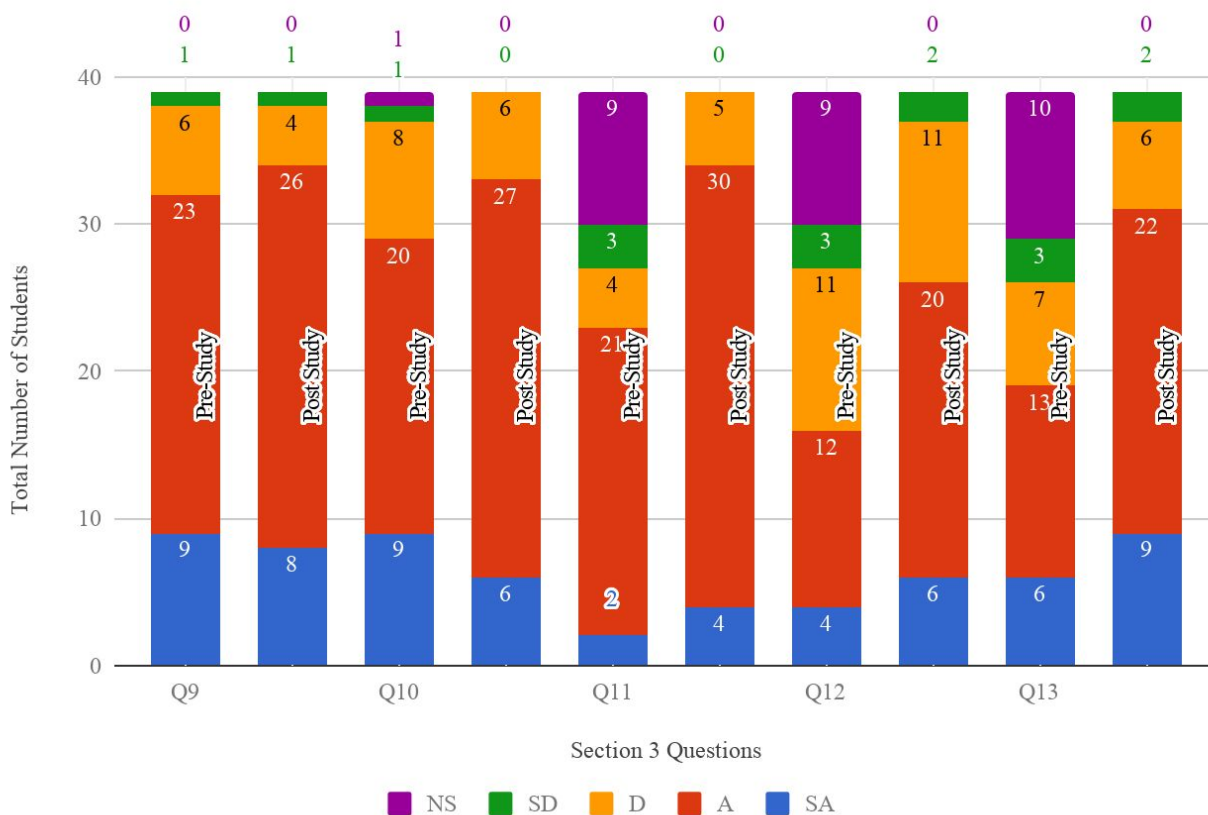72% in the pre-study responses to 74% in those after the study.
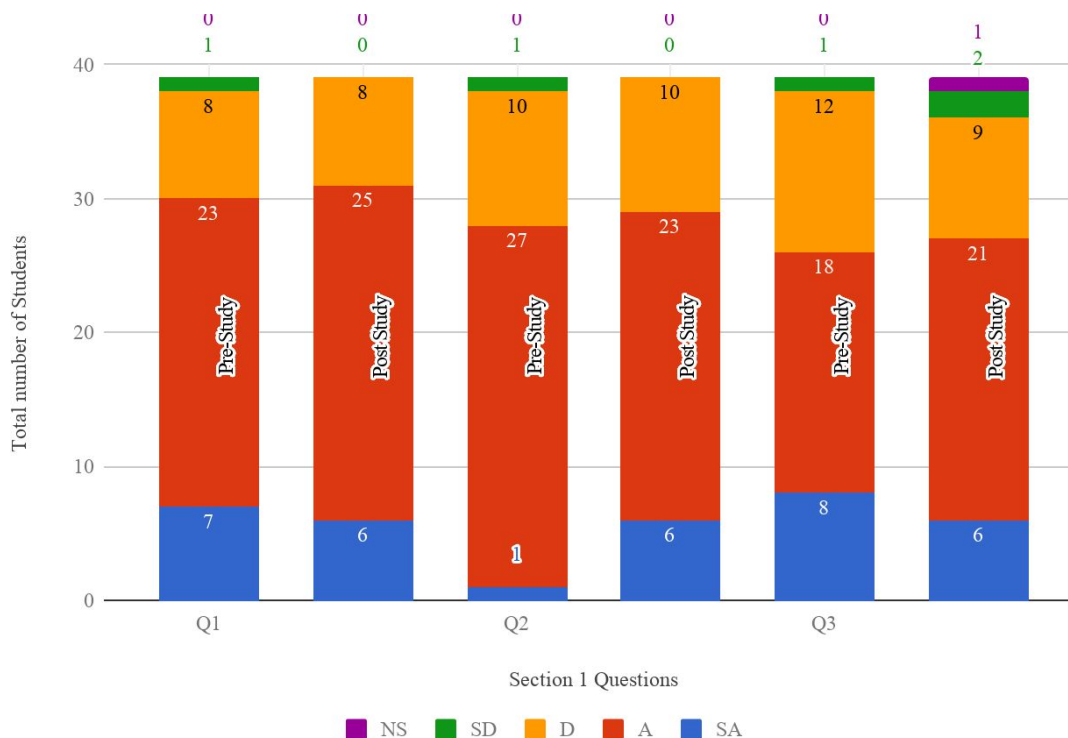
Figure 1. Responses to student feedback form (Appendix G) section one. SA through SD are the abbreviated forms for the range of Strongly agree to Strongly Disagree. NS is the abbreviated form of "Not Sure". Q1: Writing is easy for me. Q2: I can explain my ideas clearly when I write. Q3: I am confident in my writing skills.

According to question nine (Figure 2), the percentage of students who indicated

that they plan what they are going to write before they begin went from 82% before the

study to 87% afterward. Additionally, on question twelve (Figure 2), only 67% of

students reported that text structures help them in planning. A comparison of the pre- and

post-study responses to question ten (Figure 2) revealed an increase in positive responses

from 74% to 85%. According to question eleven (Figure 2) of the feedback form, 87% of

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students had positive responses when asked if they use text structures in their writing.

The responses to question thirteen showed that 79% of students indicated that text

structures helped them organize their ideas.

Figure 2. Responses to student feedback form (Appendix G) section three. Q9: I plan what
I am going to write before I begin. Q10: I can organize my ideas in my writing. Q11: I can use
text structures in my writing. Q12: Text structures help me plan what I am going to write before I
begin. Q13: Text structures help me organize ideas in my writing. *The pre-study data for
questions 11-13 is not considered to be an accurate representation due to students having
no prior knowledge of text structures. SA through SD are the abbreviated forms for the
range of Strongly agree to Strongly Disagree. NS is the abbreviated form of "Not Sure".
There was an observed positive increase in question 10 which assessed how students
organized their thoughts. Question eight which assessed how students write differently
for different classes saw an 11% increase in the strongly agree category. Question 11 saw
big positive increases overall and one-third of students responded with disagree, and
strongly disagree for question 12.

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Student Perception of Writing in School

In question four of the student feedback form (Appendix G), 92% of students agreed with the statement that writing is important in ELA class on both the pre- and post-study feedback form. Question five about the importance of writing in other courses increased from 77% to 85% from pre- to post data collection. Question six, which asked if students learned to write in ELA, dropped from 82% to 77% from pre- to post feedback. Question seven, that asked if students learned to write in other classes, showed an increase from 54% to 59% during the study. Question fourteen asked students about the differences between writing in different classes. In both the pre- and post-study responses, multiple students noted that the expectations for writing were higher in ELA than other classes. However, the post-study data revealed that more students believed that writing was important in science class.

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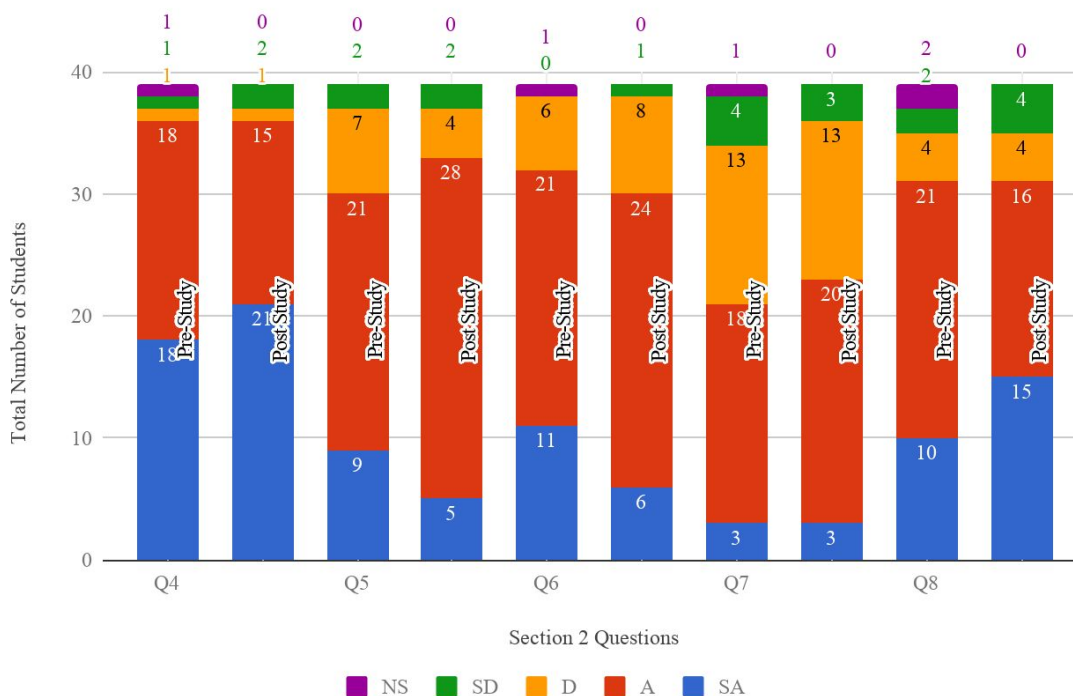
Figure 3. Responses to student feedback form (Appendix G) section two. SA through SD are the abbreviated forms for the range of Strongly agree to Strongly Disagree. NS is the abbreviated form of "Not Sure". Q4: Writing is important in English class. Q5: Writing is important in other classes. Q6: I learn how to write in English class. Q7: I learn how to write in other classes. Q8: I write in different ways for different classes.

Summary Writing Skills Rubric

The majority of students (56%) remained neutral regarding overall performance gains in science with fewer students (5%) who decreased in ability. Meanwhile, 38% of students experienced significant overall gains in science. In ELA, a similar amount of students experienced overall significant loss (28%) than significant gain (31%) as shown in figure 4.

The ELA rubric scores (Figure 4) show that 15% of students exhibited a significant loss in the area of clarity, while 13% showed significant gain. The data

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showed gains of 10% in the signal words criteria. Overall the neutral category had the

highest scoring areas as shown in figure 4.

Students in science increased by 25% in comprehension, 31% in syntax and 31%

in signal words as shown in figure 4. Additionally, 13% of students experienced

significant gains in clarity, while 3% showed a significant loss. Across all four categories,

there was a 10% significant loss and an average of 73% of students remaining neutral.
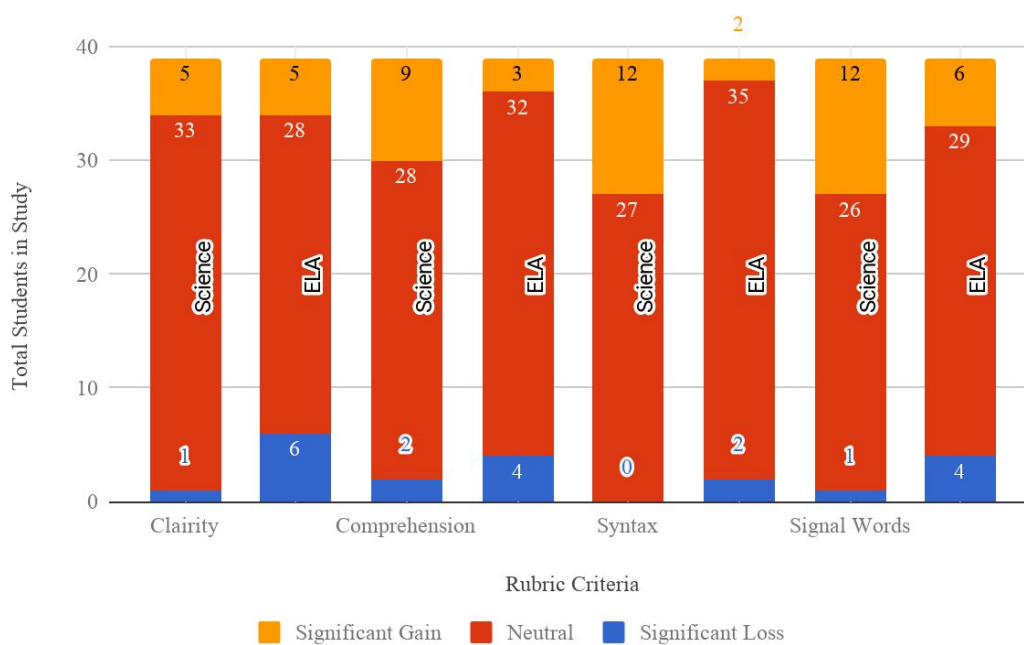
Figure 4. Growth in student writing samples from the four rubric criteria. ELA values for each criteria were calculated by finding the difference between the final summative and initial formative assessment scores while science evaluated the difference between two summative assessments. Student performance ranges were determined by adjusting for the average point difference between instructors and predicted student test variation.

Prevalent Themes from Student Conferences

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To further investigate the effects of nonfiction text structure instruction on student writing skills, the researchers looked for trends in the responses to five open-ended questions from sixteen student conferences.

The first question asked students to express how well their writing represented their level of understanding of the content. A recurring theme that stood out was that students understood the content better in their heads than what their written summary expressed (Figure 5). One student noted that he "didn't say it right," while another explained a reason for the discrepancy; "When you're writing you're trying to copy down facts and find the main idea." Students also reflected that they rushed through their summary when they should have taken more time. After students read their summaries back to the interviewer, they easily identified mistakes they made and should have corrected.

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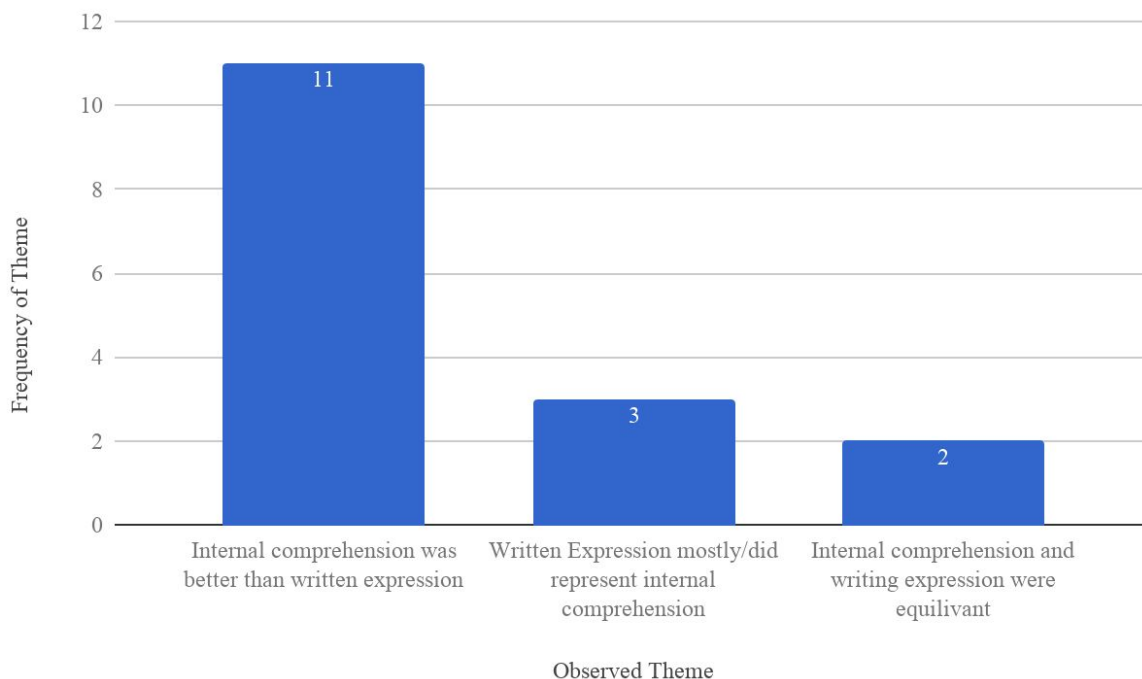
Figure 5. Observed themes for the question: How well does this sample of writing show your understanding? Sixteen total students were included in the conferences, but some student responses contained more than one theme.

The second question asked students to explain how they used graphic organizers to plan their writing and if they did not use these tools, if their knowledge of the graphic organizers helps them with their writing. A high frequency of students identified that the graphic organizers were helpful. One student said she "used [them] to plan what [she] was going to write." Some also stated that they only really needed to create an organizer if they felt like the question was a difficult one or if they were unsure about their response (Figure 6). One student explained, "I do the thinking map in my head as I'm writing it."

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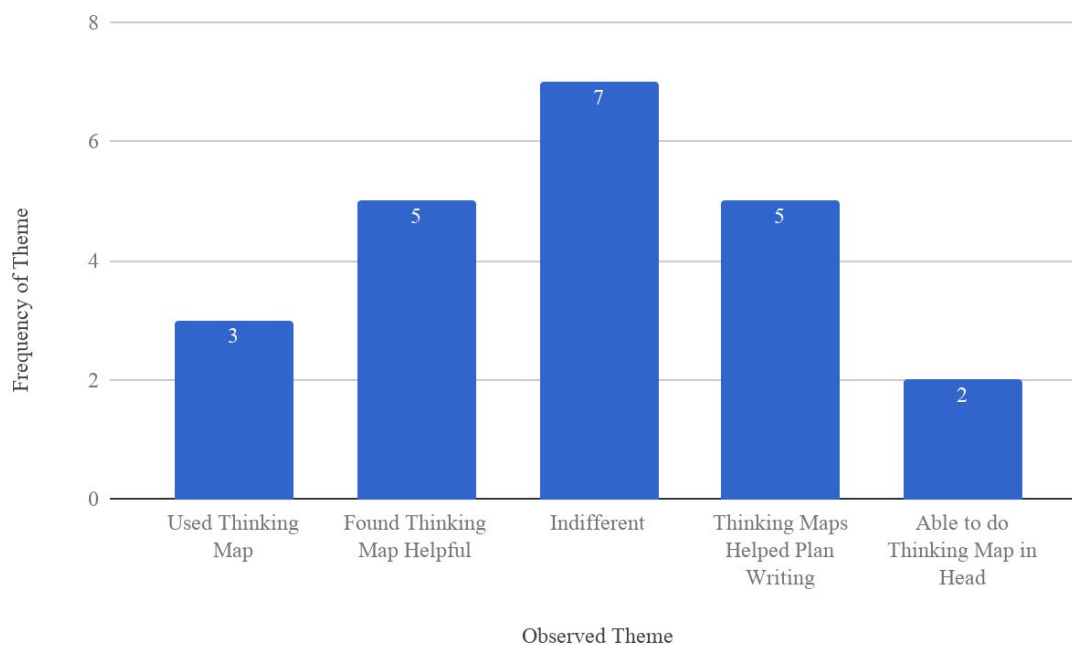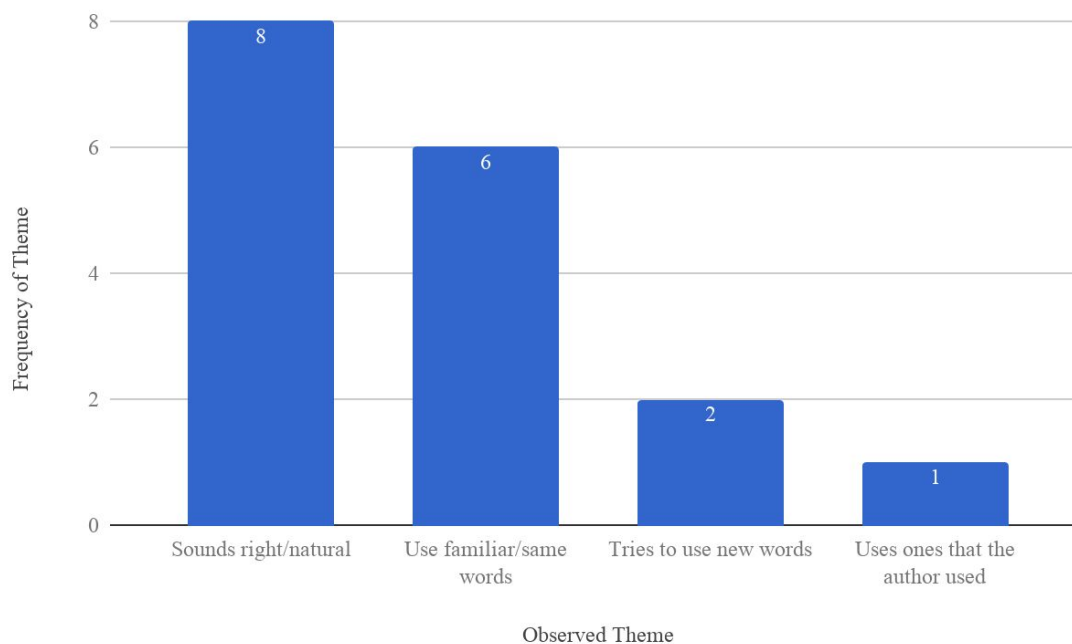

Figure 6. Observed themes for the question: How did you use a graphic organizer to write this? Sixteen total students were included in the conferences, but some student responses contained more than one theme.

The third question in the student conferences asked students to explain how they used a nonfiction text structure to communicate their ideas. The responses to this question were repeated in question five, so the researchers compiled the responses of both questions for analysis. A science student indicated that cause and effect was the correct text structure to use because the GIF clearly demonstrated that idea." The cause was the bird flying down to get the fish, and the effect was that it flew away with it." Students frequently stated that they typically started their summaries with writing about the cause and then the effect instead of starting with the effect and then stating the causes.

To answer the fourth question, students explained how they selected signal words with their text structure. Students identified that they used similar words every time

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because they felt "natural" and that they "felt right" or "sounded right" to them (Figure 7). They also stated that they typically used the same words each time to start their summaries for the reasons identified above. One student described her use of the word since; "I guess I used that because it is a word that is used most." Some answers reflected an understanding of text structures. One student said she used "consequently" because she, "thought the effect was a consequence." Another student mentioned, "These words were the best way to say the sentence chronologically."

Figure 7. Observed themes to the question: Tell me about how you chose signal words with your text structures. What signal words did you choose to use and why? Sixteen total students were included in the conferences, but some student responses contained more than one theme.

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To answer the fifth question, students explained how they used text structures to explain their thinking and show understanding of the content. Students frequently indicated that text structures helped them organize their thoughts and also increased clarity in their writing (Figure 8). Statements like these suggest that science students focused on organization; "Without text structures, it sounds weird and not natural," "I followed my thinking map exactly for the summary," and "I could see the writing happening both ways [cause then effect or effect then cause]." ELA students reflected more on the impact of text structures and clarity, "I took some things from the article and changed it so that my cousins and sister could understand it" and "I write it (summary) so someone else can understand it."
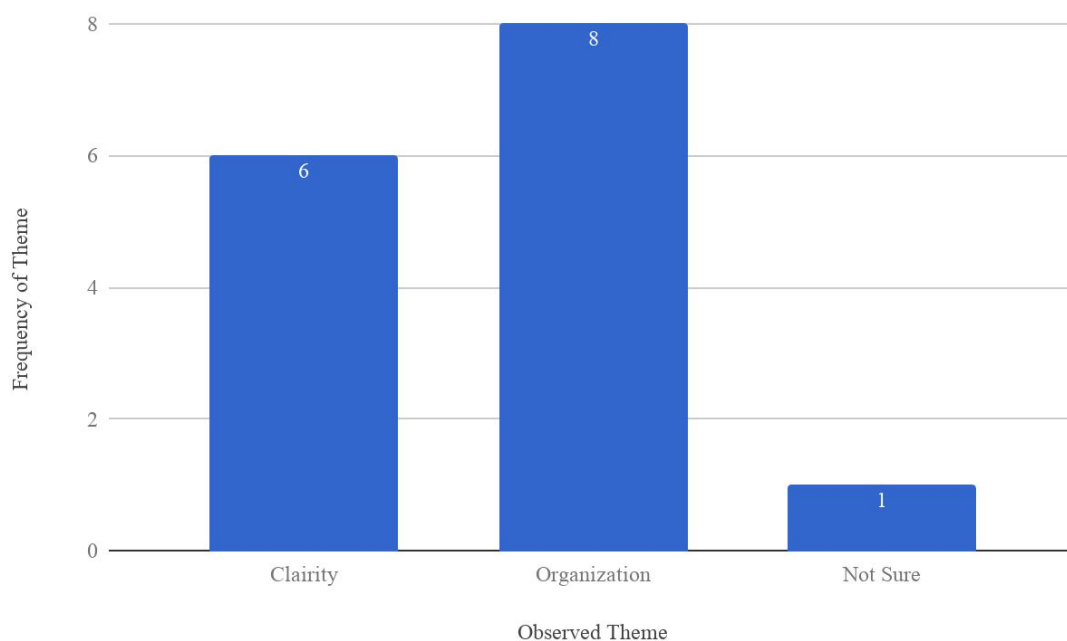

Figure 8. Observed themes to the question: How did you use text structures to explain your thinking and show your understanding of content? Sixteen total students were included in the conferences, but some student responses contained more than one theme.

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Overall Student Growth

Throughout the study, student growth shifted from high initial significant loss in ELA to a mostly neutral or significant gain category in science as shown in figure 9. Roughly 56% of students ended in the neutral category (which had a higher range of overall growth), and the significant loss decreased by about 23% from ELA to science.
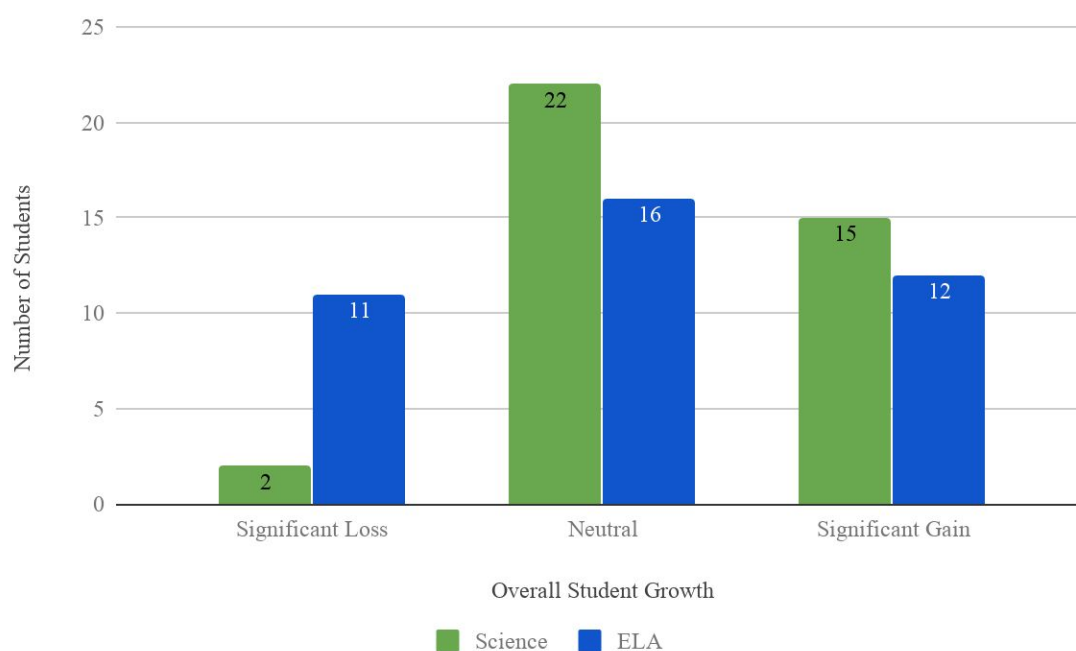
Figure 9. Overall writing growth for science and ELA. Totals were calculated using the difference between the final and initial overall rubric scores. Student performance ranges were determined by adjusting for the larger point variance and taking into consideration instructor point variation and predicted student test variation.

While racial equity gaps were not a specific portion of the study, it is common practice for the researchers to disaggregate results by race to identify themes and trends. In ELA and science, black students saw the highest amount of significant loss overall as shown in table 2. Aside from the single Hispanic student, white students saw the highest

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significant gains in ELA (42.86%) and Asian students saw the highest significant gains in science (66.67%). White students in science remained mostly neutral (78.57%) and in ELA Asian students were mainly neutral as well (55.56%) as shown in table 2.

Table 2

Student Achievement Growth by Race

Course	Ethnicity	Significant Loss	Neutral	Significant Gain
ELA	Black	40.00%	33.33%	26.67%
Science		13.33%	46.67%	40.00%
ELA	White	14.29%	42.86%	42.86%
Science		0.00%	78.57%	21.43%
ELA	Hispanic	0.00%	0.00%	100.00%
Science		0.00%	100.00%	0.00%
ELA	Asian	33.33%	55.56%	11.11%
Science		0.00%	33.33%	66.67%

Student growth in over all scores were aggregated by race to see the percent for each range. Black and Asian students had higher significant gains in science than in ELA. A high neutral percentage for white students was observed for science while neutral and significant were evenly split in ELA. The single Hispanic student had significant gains in ELA while remaining neutral in science.

Action Plan

This study sought to determine the effects of nonfiction text structure instruction on the writing skills of 6th-grade students. The researchers used mentor texts, graphic organizers, and signal words in both ELA and science class to scaffold the use of text structures in their writing. Specifically, the researchers investigated the effects of this

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instruction on student perception of their writing skills, student perception of writing for various classes, and student writing skills.

Conclusions of Rubric Data from Writing Samples

The following conclusions were drawn about the effects of nonfiction text structure instruction on student writing skills:

- The superior growth of student writing skills in science could be due to the continued practice of the strategies first introduced in ELA.

- The improvement in syntax and signal word criteria could be an effect of the direct and continued instruction of signal words and text structures.

- This negative effect on clarity in ELA could be a result of students still familiarizing themselves with the text structures, causing errors in their writing. This difference in outcomes between ELA and science could also be explained by a difference in comprehension of the content.

- The racial inequity in growth from one content area to the other might show that interdisciplinary instruction of text structures allows teachers to meet the needs of a diverse group of students in different ways. However, this may also reveal a lack of cultural relevance in the texts selected for assignments in ELA.

Conclusions Related to Student Perceptions of Writing Skills

Based on the findings of the data from the student feedback form and student conferences about the writing process, the following conclusions were drawn about student perceptions of their writing skills:

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- The instructional techniques, however, did not have a sizeable effect on students' overall confidence in their writing skills. From student conferences, most students reported that they did not think their writing showed how well they understood the content. This may be the result of not explicitly teaching and providing time for summary revision and proofreading.

- The instructional strategies did not have a meaningful effect on how students plan their writing. These results suggest that students relied less on text structures for planning because they already had higher confidence in planning their writing.

- Direct instructional techniques for the organization of ideas through the use of text structures helped students organize their ideas more efficiently.

- Following the instruction, students were aware of nonfiction text structures in their writing. This awareness was echoed in the student conferences about the writing process.

Conclusions Related to Student Perception of Writing Instruction

Based on the findings of the data from the student feedback form, the following conclusions were drawn about how students view writing instruction across different content areas:

- It is clear that students see writing as an important part of ELA class.

- The small percentage gain in students' ability to recognize writing as a skill taught in other classes might be attributed to students' heightened awareness of writing in ELA and science but not in MN studies or math. This could be

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addressed by rephrasing the question to be more explicit or having more core teachers use nonfiction text structures and thinking maps in their classes.

- The downward shift in the question, "I learn to write in English class," might suggest that fewer students believed that they are not limited to writing in ELA class, and it shows an understanding that students learn to write in other classes as well.

- Students identified that they write in complete sentences and paragraphs in ELA class and mostly write notes in other content areas.

- Students identified that they perceived higher expectations for writing quality in ELA than in other content areas. Regarding this, students expressed that they put more effort into their writing when they knew it would be graded.

- Student perception of writing in science has changed and students now identify science as a class where writing expectations are higher than before.

Conclusions from Student Conferences

Based on the findings from the student conferences the following conclusions were drawn from observed common themes:

- During the student conferences, a recurring sentiment was that students felt like they understood the content better internally than what was presented in their written summary.

- Of the students spoken to by the researchers, most had indifferent feelings towards the use of a thinking map, but overall students thought that they were helpful and aided them with organizing their writing. These results could change

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drastically if students weren't selected through convenience and instead were gathered from a target group.

- During the conferences, students discussed how they selected signal words when using text structures in their writing. When students expressed that they chose signal words because they "felt right," this revealed that the signal words acted as a tool to increase the clarity of their writing. There might be a need to caution students to avoid using similar signal words used by the mentor text's author(s) to avoid unintentional plagiarism.

- Aside from the general use of text structures, responses indicated that graphic organizers were particularly useful in organizing ideas and also allowed students to express themselves more clearly as well.

Recommendations for ELA

Based on the findings and conclusions of this study the researchers make the following recommendations:

- During instruction, reinforce the idea that nonfiction text structures help writers plan their writing and organize their ideas.

- When introducing graphic organizers, give many examples of how they can be structured to avoid a misconception that they are rigid. For example, a model that an event can affect without a cause or vice versa.

- When introducing graphic organizers, also stress that these need to be created on paper until the writer is comfortable enough with them to organize the structure without a visual representation.

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- Leverage the use of graphic organizers to organize ideas first to collect information from a text and later to plan for writing.

- When introducing signal words, make it clear to students that they are useful for finding and identifying text structures, as well as for communicating their written ideas.

- Explicitly teach that only one signal word needs to be used for each connection between ideas. For instance, "Since I needed more bread, for that reason I went to the store," is not an appropriate use of signal words.

- To avoid plagiarism, emphasize instruction of paraphrasing skills.

- When assessing student writing, provide specific feedback beyond rubric scores and allow students class time to edit and make revisions.

- Select materials for instruction with mindfulness of cultural relevance to students and monitor results for racial inequity.

Recommendations for Science

Based on the findings and conclusions of this study the researchers make the following recommendations to science teachers:

- In between summative assessments, there should be assessed formative practice using the common rubric where students receive constructive feedback.

- The instructor should have new images daily for non-graded formative, student group practice.

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- Analyze student growth for assessed formative work and compare it to summative growth to see if there are any significant trends.

- Images should have some related themes to help build student familiarity and confidence.

- Students working in groups must be held accountable for individual participation. Providing a large piece of paper on which students create thinking maps and summaries with different colored markers could show evidence of participation (each partner should use a different color).

- Groups in the class should be required to share out their summaries for evaluation by their peers.

- Summaries for inertia lab stations should be done as a class activity rather than an individual or small group task.

- Summaries for acceleration lab stations should be done individually or as a small group.

Recommendations for Interdisciplinary Collaboration and Research

Based on the findings and conclusions of this study the researchers make the following recommendations:

- When soliciting participation and feedback from parents, utilize digital formats to make the process more convenient and collect more data. Only sending paper copies home did not result in a valuable amount of data.

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- The ELA teacher should introduce the text structures, signal words, and graphic organizers. Once students have started practicing the use of these tools in ELA class, teachers of other content area should begin implementation in their classes.

- Other content area teachers should reference the instruction in ELA class when utilizing nonfiction text structure techniques.

- Make a word wall in each participating teacher's classroom to make signal words visible and accessible.

- Facilitate reflection on signal word choice and encourage students to take risks by using less familiar signal words.

- Collaboratively create the rubric and assess some student work together to discuss expectations and maintain continuity.

- Include provisions in the rubric to address plagiarism.

- Utilize the common rubric to assess student writing before, during, and after instruction to check for growth and inform further instruction.

- Put the student conference and feedback form questions in more student-friendly language. Specifically, mention the graphic organizers and signal words in the student feedback form to analyze effectiveness.

- Conduct conferences based on purposefully defined student groups such as; struggling/not engaged students, English language learners, and special education students.

- Compare data of students who create thinking maps and those who choose not to make them.

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- Facilitate cooperative practice of the strategies including partner reading,

  paraphrasing, writing composition, and proofreading.

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Maps on Writing Quality in sixth-grade ELA and Science Students

Appendix A

Full resource with animated GIFs can be referenced at
https://docs.google.com/presentation/d/e/2PACX-1vRbZFMq1Ii97mYgrCsJVEQs-RWFj8
nNoQ4B252Vr93_Vx6Cimcz76gJVp_oyQG1g4vUu2Zo0lgrVTnQ/pub?start=false&loop=f
alse&delayms=3000

Figure 11. First GIF for Inertia notes
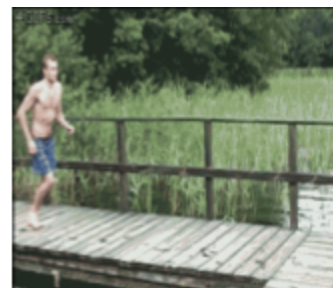

Figure 12. Second GIF for Inertia notes

Figure 13. Third GIF for Inertia notes

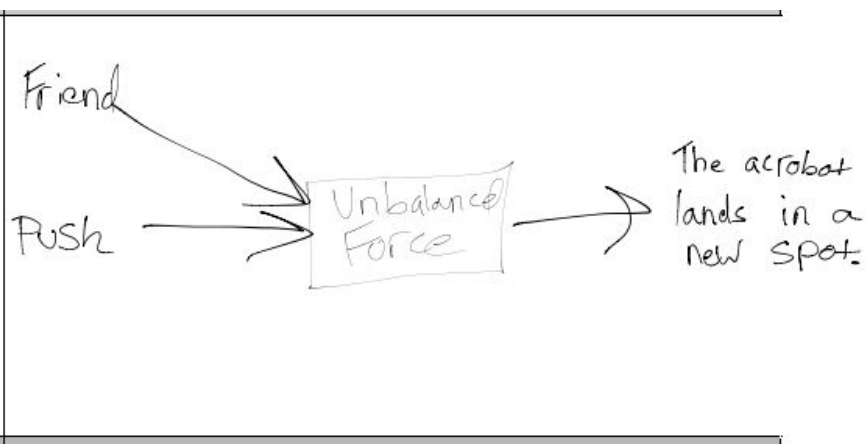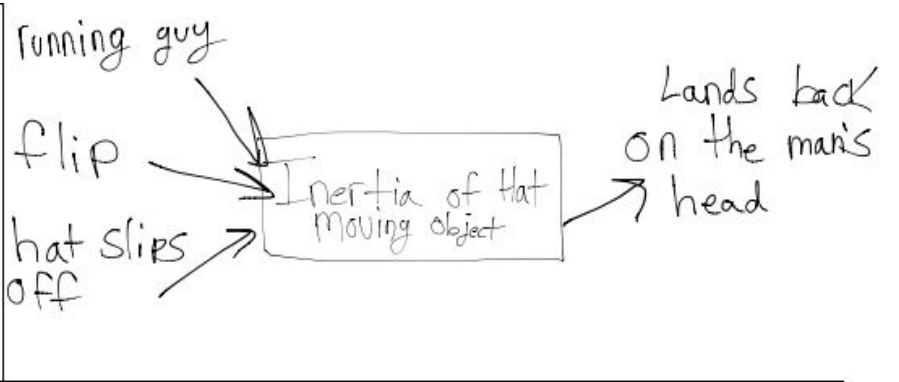*Figure 14*. Third GIF for acceleration notes

Figure 15. Third GIF for acceleration notes

Figure 16. Third GIF for acceleration notes

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The Acrobat Create a thinking map showing cause and effect for what is occurring in the picture.	Friend Push → Unbalanced Force → The acrobat lands in a new spot.
The Acrobat Summary Answer like this: 1. Describe what is happening in a few words. 2. Say what Law we are currently working on and describe how this image shows that law. 3. Use vocabulary as much as possible!!	A kid flips, his friend pushes him and he lands in a new spot. This shows Newton's law of Inertia. A friend's push led to an unbalanced force. Due to the unbalanced force the acrobat landed in a new spot.
Lucky Hat Create a thinking map showing cause and effect for what is occurring in the picture.	running guy flip → Inertia of Hat moving object → Lands back on the man's head hat slips off →
Lucky Hat Summary: Answer like this: 1. Describe what is happening in a few words. 2. Say what Law we are currently working on and describe how this image shows that law. 3. Use vocabulary as much as possible!!	Guy flips and his hat comes off but it lands back on his head. This shows Newton's law of Inertia. The reason why the hat comes off is because of the flip. For this reason the hat has inertia and lands back on his head.

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Appendix B

Lab- Inertia Rama

Purpose: To observe multiple activities that demonstrate the law of Inertia and identify unbalanced forces.

Station 1- Dollar Snatcher

Set Up the station as shown below. Have one partner place their hands around the top jar and have the other partner pull the dollar out as quickly as possible. Draw a force diagram to show the unbalanced force and write an explanation for how it affected the inertia of the jars.

	Force Diagram	Inertia Explanation
Partner's hands protecting jars $$ Partner snatching the dollar		

Station 4- Eraser Drop

Place the plastic hoop on top of the jug. Place the eraser on top of the hoop above the opening of the jug. Try and remove the hoop and have the eraser enter the the jug.Draw a force diagram to show the unbalanced force and write an explanation for how it affected the inertia of the eraser.

	Force Diagram	Inertia Explanation
Counter Top		

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Appendix C

Newton's Second Law Stations
Garbage Collector

Start the car at the starting line. Push down the man to "start" the motor. Watch the truck's motion. Place cylinder 1 in the back of the truck and repeat. Put cylinder 2 in the back of the truck and repeat. How does this show Newton's Second Law?

When did the truck accelerate the fastest?	When did the truck accelerate the slowest?
During the 3 trials, what stayed the same, and what was different? Mass= Same or Different Acceleration= Same or Different Force= Same or Different	Relate this to Newton's Second Law

Mini-Bowling

Set up the bowling pins on the marked area. Use the ramp to try to hit the pins. Try first with the blue marble, then the small metal marble, and last the larger metal marble.

How many pins did you knock down with the blue marble?	
How many pins did you knock down with the small marble?	
How many pins did you knock down with the large metal marble?	
How can you relate this to Newton's Second Law?	

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Appendix D

Cause and Effect of Inertia

Purpose: To use a thinking map and signal words to properly explain cause and effect using Newton's Law of Inertia

Directions: Use the provided GIF to create a thinking map and the list of signal words to write a summary.

THINKING MAP

SIGNAL WORD LIST

- as a result of
- effect of
- a cause of
- resulted in
- had an effect of
- because
- because of
- for
- reason why
- therefore
- consequently
- for this reason
- due to
- led to
- if...then
- as
- so
- since

SUMMARY

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The Effects of Teaching Nonfiction Text Structure Reading Strategies and Thinking Maps on Writing Quality in sixth-grade ELA and Science Students

Cause and Effect for Acceleration

Purpose: To use a thinking map and signal words to properly explain cause and effect using Newton's Law of acceleration. A = F / m

Directions: Use the provided GIF to create a thinking map and the list of signal words to write a summary.

THINKING MAP

Science Vocabulary
• Force
• Mass
• Acceleration

SIGNAL WORD LIST

• as a result of
• effect of
• a cause of
• resulted in
• had an effect of
• because
• because of
• for
• reason why
• therefore
• consequently
• for this reason
• due to
• led to
• if...then
• as
• so
• since

SUMMARY

Write or type your answer here.

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Cause and Effect for Acceleration

Purpose: To use a thinking map and signal words to properly explain cause and effect using Newton's Law of acceleration. A = F / m

Directions: Use the provided GIF to create a thinking map and the list of signal words to write a summary. You should focus on the force and acceleration of the bike.

THINKING MAP

Science Vocabulary
- Force
- Mass
- Acceleration

SIGNAL WORD LIST

- as a result of
- effect of
- a cause of
- resulted in
- had an effect of
- because
- because of
- for
- reason why
- therefore
- consequently
- for this reason
- due to
- led to
- if...then
- as
- so
- since

SUMMARY

Write or type your answer here.

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Maps on Writing Quality in sixth-grade ELA and Science Students

Appendix E

Question 1 (16 points)

Using the video below, answer the following question:

1. **Focusing** on the **fish**, use your signal words and science vocabulary to write a summary explaining how this shows Newton's first law of Inertia.

▶ 0:00 / 0:05 ⛶

🔲 Show Rubric

Question 5

Using the GIF below, create a thinking map that is focused on the ACCELERATION of the AXE

▶ 0:02 / 0:04 ⛶

Write a summary using science vocab and signal words to show cause and effect of Newton's Second Law

🔲 Show Rubric

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Appendix F

Guardian Feedback

This will be used for Mr. Bracchi and Mr. GrandPre's Action Research Project. Completion of these questions is voluntary and confidential.

Choose the answer most appropriate for your situation:
- ☐ I would like to continue, but prefer not to have my responses included in the study.
- ☐ I would like to continue, and I am comfortable allowing my responses to be included confidentially.

Do you think students write enough in school?
- ☐ I think students do plenty of writing in all of their classes.
- ☐ I think students write mainly in their English course.
- ☐ I think students need to write more in school.

Do you think each teacher should teach content specific writing?
- ☐ I think that writing should be taught by the English teacher only.
- ☐ I think that teachers address writing in their class as necessary but if that isn't their content focus, they shouldn't be expected to explicitly teach it.
- ☐ I think that it would be nice for teachers to spend more time on writing for their specific content area.
- ☐ I think that all teachers should be required to specifically teach writing for their content areas.

My student can effectively express their understanding of classroom content through their writing.
- ☐ Strongly Agree
- ☐ Agree
- ☐ Disagree
- ☐ Strongly Disagree

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Appendix G
Student Feedback Form

ME AS A WRITER: Choose an answer that best shows your feeling about each statement. *

	I strongly agree with this.	I agree with this.	I disagree with this.	I strongly disagree with this.	I do not understand what this means.
Writing is easy for me.	○	○	○	○	○
I can explain my ideas clearly when I write.	○	○	○	○	○
I am confident in my writing skills.	○	○	○	○	○

WRITING IN MY CLASSES: Choose an answer that best shows your feeling about each statement. *

	I strongly agree with this.	I agree with this.	I disagree with this.	I strongly disagree with this.	I do not understand what this means.
Writing is important in English class.	○	○	○	○	○
Writing is important in other classes.	○	○	○	○	○
I learn how to write in English class.	○	○	○	○	○
I learn how to write in other classes.	○	○	○	○	○
I write in different ways for different classes.	○	○	○	○	○

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HOW I WRITE: Choose an answer that best shows your feeling about each statement. *

	I strongly agree with this.	I agree with this.	I disagree with this.	I strongly disagree with this.	I do not understand what this means.
I plan what I am going to write before I begin.	○	○	○	○	○
I can organize my ideas in my writing.	○	○	○	○	○
I can use text structures in my writing.	○	○	○	○	○
Text structures help me plan what I am going to write before I begin.	○	○	○	○	○
Text structures help me organize ideas in my writing.	○	○	○	○	○

What is different about how you write in your classes? *
Please explain which classes you write in and WHY they are different.

Your answer

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Appendix H
Writing Text Structures Rubric

Criteria	Scores			
	4 Exceeds Expectations	3 Meets Expectations	2 Partially Meets Expectations	1 Doesn't Meet Expectations
Clairity: The writing explains the ideas clearly.	Reader is able to understand the ideas written.	Reader is able to understand the ideas written. Some important ideas are missing.	Reader can understand most of the ideas written.	Reader is frequently confused by what is written.
Comprehension: Strong understanding of the content is shown.	Student writing reflects deep understanding of content.	Student writing reflects basic understanding of content.	Student writing reflects some misunderstandings of content.	Student writing does not reflect understanding of content.
Syntax:Sentences are structured well.	Sentences reflect understanding and completely accurate use of text structures.	Sentences reflect understanding of text structures and mostly accurate use.	Sentences reflect understanding of text structures and attempted use.	Sentences reflect a lack of targeted text structures.
Signal Words: Signal words are used to accurately show text structures.	Writing includes accurate and appropriate use of signal words for text structures.	Writing includes accurate and appropriate use of signal words for text structures. Some important ideas are missing as are the signal words to include them.	Writing includes the use of signal words but they may not all be accurate and/or appropriate for the text structures.	Writing has evidence of signal words but they are used out of context or used inaccurately for the text structures.

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Appendix I
Student Conference Questions: Text Structure
We will ask these questions of students in the context of a sample of their writing. Space for note taking is given, but conversations will also be recorded for review.

1. How well does this sample of writing show your understanding of (*content of assignment*)? Please explain:
   a. Follow up as needed: Do you understand the topic better in your head than you do on paper?

2. How did you use graphic organizers to write this?
   a. Follow up as needed: If you didn't use a graphic organizer for this, did your understanding of graphic organizers help you with the writing?

3. Tell me about how you used text structures to communicate your ideas.
   a. Follow up as needed: What text structures did you use in this writing and why?

4. Tell me about how you chose signal words with your text structures.
   a. Follow up as needed: What signal words did you choose to use and why?

5. How did you use text structures to explain your thinking and show your understanding of (*content of assignment*)?