

THE EFFECTIVENESS OF GRAPHIC ORGANIZERS:
A QUANTITATIVE STUDY ON THE EFFECTS OF VENN DIAGRAMS VERSUS
CONCEPT MAPS ON STUDENT TEST SCORES

By

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CERTIFICATION OF PROJECT WORK

We, the undersigned, certify that this project entitled THE EFFECTIVENESS OF GRAPHIC ORGANIZERS: A QUANTITATIVE STUDY ON THE EFFECTS OF VENN DIAGRAMS VERSUS CONCEPT MAPS ON STUDENT TEST SCORES by Rebecca A. Humbert, Candidate for the Degree of Master of Science in Education, Curriculum and Instruction, is acceptable in form and content and demonstrates a satisfactory knowledge of the field covered by this project.

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Abstract

Many studies have been done to determine that graphic organizers are an effective tool in teaching, but not much work has been done on specific types. The purpose of this action research project was to determine which type of graphic organizer- Venn diagrams or concept maps- was more effective as measured through student test scores. The participants included two fifth grade students from a rural Chautauqua County School. The study was a total of four weeks long. Each week the students were given reading passages on which they took a pre-test, analyzed the readings using a Venn diagram or Concept map, and then took a post-test. The data sources included pre and post-test raw scores. The pre and post-test scores were analyzed to determine which type of graphic organizer was more effective on producing higher test results and improvements. The study found that the use of both Venn diagrams and concept maps significantly increased test scores with both participants.

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Introduction

Graphic organizers are used in schools across the country every day. They are held as excellent evidence based practice which teachers turn to when planning lessons in all subject areas. In all of the research out there, much has not been found on comparing two specific types of graphic organizers, Venn diagrams and Concept maps. There are two types of graphic organizers that are used primarily in comparison. They are found in all levels of education because of their flexibility of subject focus, but primarily used in elementary classrooms. Graphic organizers can be used in many ways but have found to be more effective when used in certain ways. “GOs are used in order to assess the degree of students’ understanding and enhance recall, retention and summarization of main ideas, which can often function as a plan leading to writing tasks,” (Manoli & Papadopoulou, 2012, p. 353). In this study graphic organizers were used to enhance the students’ ability to recall and to assess their understandings of the readings.

Graphic organizers are popularly used to measure student understanding and comprehension. One study states, “real examples are described to explain how to use graphic organizers to help ELLs comprehend book content by classifying facts, analyzing problems, summarizing main points, and criticizing or evaluating the decisions made by authors,” (Pang, 2013, p. 54). As the study states graphic organizers as used in a variety of ways that are all based around comprehension. A few of the strategies that teachers use graphic organizers for are analyzing, summarizing, and evaluating.

This study was done in an elementary classroom that is located in a rural Chautauqua County school. It was done with two students, one male and one female, who both speak English as their first language. There is much research out there on testing graphic organizers with

elementary students and on test scores, but not the specific graphic organizer that this study deals with. It is important to understand the effectiveness of all tools that teachers decide to incorporate in the classroom. The purpose of this study was to find data to support which graphic organizer, the Venn diagram or Concept map, was more effective in increasing student test scores.

Literature Review

Introduction

Graphic organizers have been widely researched for their use in classrooms. There is much research out there on their effect on different types of learners, students, and subject areas. This literature review will cover the effect of graphic organizers on students with learning disabilities, reading comprehension, classroom test scores, and English Language Learners. It will also explore the two types of graphic organizers that the study will focus on, Venn diagrams and concept maps. It will introduce two specific graphic organizers and their functions, which are employed in the study. Its purpose is to build the readers knowledge on the uses of graphic organizers and possible uses for them. One article by Clark and Mayer, states that it is helpful to include graphic organizers in instruction to help students build and understand relationships among concepts. This is one primary reason that many instructors choose to include graphic organizers in classroom learning.

Use of Graphic Organizers with Students with Learning Disabilities

There are many studies that have been done to determine the effect of using graphic organizers with students with learning disabilities. Retention of new knowledge is especially hard for students with learning disabilities. For this reason, teachers use instructional tools to help students remember the knowledge. One of the most common instructional tools that are used for

this are graphic organizers (Ozmen, 2011). In the study by Ozmen (2011), having the students examine the graphic organizer that they filled out while reading was especially beneficial for them. It helped them see the parts compared to a whole and how the ideas relate to one another. Learning disabled students need structure and organization in order to have the best comprehension of a text (Quist, 1995). Being so beneficial in this way, graphic organizers are a way to accommodate these learners and provide this structure that they need. Another difficulty that students with learning disabilities have is that they are passive with their reading and often are not as engaged in the text. Graphic organizers help break the text up so that students become more involved in the text which in turn increases motivation (Quist, 1995). The text in turn becomes more clear when the concepts are broken up and clarified in this way. One study found that filling out guided notes and graphic organizers while learning made them become more active learners (Hamilton, 2000). Filling out these guided notes made students more accountable for their learning. This study involved incarcerated students with learning disabilities and their learning. It also found that guided notes produced better grades which motivated the students to succeed and have a better attitude in the classroom (Hamilton, 2000). The study by Hamilton (2000) states,

“It appeared that guided notes provided students with a more accurate set of notes to study, thus allowing them the opportunity to become more active learners and earn better grades. The more accurate the notes, the more students are engaged in the learning process, and the better chance they have in succeeding on quizzes and tests,” (p. 137).

These students were given the opportunity to create notes that they knew were accurate so they were more motivated to complete them and truly learn the correct information from them. A

study by Ives (2007) investigated the use of graphic organizers in algebra instruction for students with learning disabilities. It stated:

“The results of these studies suggest that using graphic organizers to teach higher level mathematics to students with language and attention problems leads to improved conceptual understanding of the mathematics content. The use of graphic organizers may also lead to improved system solving when the systems become complex enough to challenge the ability of students to keep the process organized without the organizers,” (p. 117).

This shows that the concepts became more concrete for the students when graphic organizers were used. Also, it helped organize their thinking when the ideas became more complex. Students could use graphic organizers in math for multistep complex problems when it needed to be broken down. Graphic organizers are very flexible in this way that they can be stretched across subject areas. Another study that researched the effect of graphic organizers on learning disabled students determined that graphic organizers can scaffold learning for students. This study concluded that graphic organizers are a great prompt for students with learning disabilities because they can better visualize using them and make generalizations (Douglas, 2011). The students in this study used a computer based program to learn how to use pictorial graphic organizers. This led to completing a recipe based on these prompts. Many students with learning disabilities also struggle with memory tasks, so pictorial graphic organizers help them with that (Douglas, 2011). Having those visuals give a deeper understanding and increase the student's ability to process the information and remember it.

For students with learning disabilities, graphic organizers should be introduced in creative and inviting ways so that those students who have a hard time maintaining attention and

staying on task. When presented in an inviting way students are more likely to retain information. Inclusive classrooms are a great place to incorporate graphic organizers because they have found to be beneficial for all types of learners. Students with special needs benefit from repetition and structure, so using graphic organizers consistently in these classrooms will reap benefits for the students (Baxendell, 2003).

Graphic Organizers and Reading Comprehension

Reading comprehension is an essential skill for students to develop in each level of text. Studies have shown that graphic organizers aid in student comprehension of text (Sam, 2013). One study showed that graphic organizers help students recognize text structure in reading passages or text books (Ropic, 2012). Ropic (2012) states:

“Text structures are used by writers to illustrate relationships among concepts. Often these are accompanied by signal words that serve as guideposts alerting the reader to a conceptual relationship. It is very helpful for students to recognize the text pattern, since recognizing text structures and signal words helps them to make sense of the text,” (p. 89).

Since graphic organizers help a student to recognize text structure, they are gaining comprehension with these concepts.

Along with text structure, graphic organizers have been found to help students be able to pick important information out of a text. When teachers are correctly trained in using graphic organizers, the graphic organizers can be very beneficial in helping students keep track of information (Ropic, 2012). In order for the graphic organizers to be effective, the teacher needs to be properly familiar with them, and able to teach the students how to use them. Stenson (2006) states that graphic organizers helped the students remember relationships and events. Since the

students were able to use the graphic organizers to picture the information and remember relationships, they improved their comprehension (Stenson, 2006). Another study found that the use of graphic organizers helped students' revival of knowledge while rereading a text (Griffin, 1995). Informational texts have a different structure than narrative texts, and graphic organizers have helped students realize this structure (Ermis, 2008). In the study by Ermis (2008), graphic organizers have been found to show relationships in ideas and help students pick main ideas out of a text. This study also found that graphic organizers were more helpful to students who lacked background or basic knowledge of the text subject (Ermis, 2008). Another study done by Boulineau, Fore, Hagan-Burke, and Burke (2004) studied the effects of using graphic organizers, specifically story mapping, on a student's comprehension. This study was done with third and fourth grade students who displayed reading deficits. The graphic organizer that was being tested in this study was a story map. This study found that there was higher percentage correct of story-grammar elements after the story mapping graphic organizers were introduced and used. They also found that the positive effects from the procedure were maintained once the intervention was over (Boulineau et al., 2004).

In one school in San Diego, California, a science teacher continuously uses graphic organizers during instruction. The students claim that the graphic organizers are the most helpful tool they use while reading. When reading about new concepts, they incorporate graphic organizers. The graphic organizers show evidence of the students' understanding that the teacher can check (Fisher, 2002).

Graphic Organizers to Increase Classroom Assessment Scores

Hamilton (2000) found that graphic organizers and guided notes provided a concrete set of notes for students to study which raised their test scores. The study found that graphic organizers help

the students get accurate notes, which would transfer over to providing more accurate answers on the test. Also, when students use graphic organizers to organize thoughts during an assessment they may improve their results on reading selections (Sam, 2013). One feature of graphic organizers is that they help build vocabulary (Ermis, 2008). With the rigorous testing that is taking place, higher vocabulary skills will help raise test scores. In a study done by Ermis (2008), second, fourth and fifth grade students demonstrate their comprehension through classroom assessments. Various types of graphic organizers were used in this study. A pre-test and post-test were administered about the books used in this study. The control group received traditional literacy instruction where students read, discussed and answered questions to the teacher aloud. The experimental group used the same texts, but also constructed graphic organizers along with the texts. Ermis (2008) states:

“Results show that the pretest scores of the experimental and control groups were very similar. Results also show that the posttest scores of students receiving comprehension instruction which included the use of graphic organizers were statistically significantly higher than the posttest scores of students receiving traditional read-and-discuss instruction,” (p. 98).

This indicates that the graphic organizer instruction and use influenced the test scores of the experimental group in a positive way. Student construction of graphic organizers provided for significant classroom test score improvement.

Graphic Organizers and English Language Learners

Comprehension can be especially difficult for English as a Second Language students, but a study by Sam (2013) found that graphic organizers help improve ESL students' reading abilities which leads to greater comprehension. The students in this study all were learning English as a

second language. They were working on finding the main idea of a text, finding supporting details, learning vocabulary, distinguishing fact from opinion, and inferences, all of which are important skills for successful reading comprehension (Sam, 2013). The study also stated that the students were more hooked onto the assignment and found it more interesting with a graphic organizer. They enjoyed it more when they were filling in a graphic organizer with the comprehension passage (Sam, 2013). As stated, graphic organizers motivate students and help draw the student into a passage. If they are trying to pull information for a graphic organizer then they stay engaged in the task and are more likely to gain comprehension from the passage. This is supported by a study done by Culbert, Flood, Windler, and Work (1998). This study found that many teachers choose to complete graphic organizers with the students as a means of engagement, rather than presenting the children with an already completed graphic organizer. A study done by Vaughn et al. (2010) worked with middle school ELL students on their comprehension of social studies text. Social studies is an especially difficult topic for ELL's because the language barrier can sometimes cause confusion with complex vocabulary and ideas. An intervention began where a group of ELL students were trained to use graphic organizers along with their writing. The ELL students made a considerable jump in both vocabulary and comprehension during and after this intervention. Another study that focused on the use of graphic organizers with English as a foreign language students was conducted by Xiangying (2012). This study looked at a 16-week period of time where the effect of using graphic organizers for reading comprehension was tested against a comparison group. The students using the graphic organizers performed significantly better on reading comprehension on the posttest as compared to the pretest (Xiangying, 2012). Much of the results in the study are credited to the increase in text structure knowledge due to using graphic organizers (Xiangying, 2012).

In another study by Khatib and Faruji (2012), sixty Iranian students were learning English. The ability of graphic organizers to help them learn vocabulary was being tested in the experimental groups. The study found that incidental learning of the vocabulary happened when students filled out story map graphic organizers. The graphic organizers prompted students to pick up on characters, setting, and dialogue. The students were focusing on comprehending the text, and in this way, the incidental learning of vocabulary happened. The learners in the experimental group were more engaged in the reading of the short stories since they were the ones filling out the story maps. The learners in the control group, who were not using graphic organizers, were able to find answers in the text, but lacked a deeper understanding of what they were reading. (Khatib & Faruji, 2012).

In an article by Pang (2013), he describes how graphic organizers can be used the most effective ways with ELL's. It states that graphic organizers help ELL's in, "classifying facts, analyzing problems, summarizing main points, and criticizing or evaluating the decisions made by authors," (Pang, 2013, p. 54). Graphic organizers can also be used in a post-reading activity such as using the graphic organizer to help guide ELL's in retelling the story

Graphic organizers help ELL's build confidence in their work and learning also. When looking at graphic organizers, it is less overwhelming then looking at a full text. They are likely to feel more motivated and encouraged when it is more understandable for them. Many times graphic organizers are accompanied by labels, pictures, and shorter phrases. When they are just learning English, it is important not to overload the learner with too much. Graphic organizers can also be used as an assessment for ELL's. They may not be at the point of writing essays or constructing complete sentence responses, but their knowledge can also be demonstrated through

graphic organizers. It is important to assess ELL's in different ways when they can't express their ideas in a traditional manner (Carrier, 2005).

Venn Diagrams

Venn Diagrams are a form of graphic organizer that is used to compare concepts or ideas. Generally they are composed of overlapping circles to represent similarities and differences (Manoli & Papadopoulou, 2012). Venn diagrams can be flexible in the use of complexity and can be stretched to almost any subject area that would require comparing (Moore, 2003). Graphic organizers are just one visual tool that helps different types of learners such as English Language Learners to understand concepts better. Hadaway and Young (1994), says "Visual examples help to make more concrete the concepts presented in textbooks and to enable second language learners to hook an image to the concept being discussed (pg. 523). Coleman (2010) did a study to determine what types of graphic representations teachers were using in United States elementary schools. The study was conducted through an anonymous online survey online. The study found that Venn diagrams were in the top three most popularly used. It was reported that teachers used Venn diagrams 56.4% of the time that a graphical representation is used. It also reported that comparing and contrasting is most oftenly done with Venn diagrams than any other type. The study stated that teachers felt most comfortable with this type of graphical representation for the task of comparison. They had found the most success with them in the past and were the most familiar with Venn diagrams (Coleman, 2010).

Venn diagrams are one of the easiest graphic organizers to stretch across the curriculum. They have useful purposes in math and countless ways that they can be employed in science and social studies. For this reason, Venn diagrams can be used consistently which will make them more accessible and useful for students (Baxendell, 2003).

Concept Maps

Concept maps are a form of graphic organizer that includes enclosed concepts (usually in a circle or square) with lines connecting linked concepts. Generally, the connecting lines are labeled to demonstrate the relationship since different viewers of the graphic organizer could see different relationships between the concepts (Manoli & Papadopoulou, 2012). They organized with the most general concepts on top with the most specific on the bottom (Morphew, 2000). For younger grades the teacher often designs the concept map since the relationship is difficult to pick out for younger students. In a study by Chicioreanu and Litoiu (2012) it states, “In the teaching-learning-evaluation process, the conceptual maps are made in a very directed and controlled manner. The teacher imposes key words, relation-making schemes, the pupil having the task to fill in the blank spaces in the map structure,” (pg. 96). Concept maps also help to combine what the student already knows with new information in an organized path. Concept maps can also be tools in assessment to show what the students have learned, or as instruments to see their process of thinking, (Chicioreanu & Litoiu, 2012). One study was done with fifth graders examined three different types of concept maps. This study not only proved that concept maps positively affected text comprehension, but also text summarization. In the study, three different forms of concept mapping were used. Another component of the concept maps being used in this study was that some were partially filled out, some completely blank, and some partially incorrect. In doing this the researchers could determine which type of concept map allowed for the students to be the most engaged and actively learning. (Chang, Sung, & Chen, 2002). This also allowed for different uses of the concept maps to fit individual student’s needs.

Conclusion

Graphic organizers are a widely use technique in classrooms because of the literature above that discusses their positive effects on students. All of the studies above have led to positive

conclusions about the use of graphic organizers with students. They have shown to be positively effective with students with learning disabilities, English language learners, on reading comprehension, and on classroom test scores. It is important to be consistent with the use of graphic organizers across subject areas so that children know how to employ them during different situations (Baxendell, 2003). With all of the research out there on graphic organizers they have become more popular. A gap in the research involves comparing the effectiveness of specific graphic organizers. There have not been many studies done on comparing two specific graphic organizers on the elementary school level. Venn diagrams and concept maps are recognized in the broad category of graphic organizers, but they have not been widely researched in comparison. In this study both types of graphic organizers will be evaluated in the context of comparing and contrasting. It is the purpose of this study to deeply investigate which one of these graphic organizers will be the most effective on student test scores.

Methodology

This study was conducted as a quantitative study. Not much research has been done at the elementary level with graphic organizers, so this study's purpose was to examine their effectiveness. More specifically, there is not much research on story maps and Venn diagrams so that is where the research focused. The type of study performed was a comparison study. The effects of concept maps and Venn diagrams on student test scores were compared. I used descriptive statistics when describing the percentages of test scores when those two types of graphic organizers were used. These are two very common graphic organizers that are used in elementary classrooms, so finding their effectiveness is important for many classroom teachers.

Participants

This study was designed for two students in fifth grade. They are two students who are receiving tier 2 interventions in English Language Arts. They struggle with reading comprehension so the intervention was appropriate. The students are ages 10-11 and attend a rural Chautauqua County school. It is one male and one female. The students are in the general education settings and pulled out only for Response to Intervention services. They are among grade level peers throughout the day. A letter was sent home to the parents for them and the students to sign with consent to participate in this study. Both students returned signed letters with no questions from guardians. A verbal permission from the principal was also granted, along with an electronic confirmation for me to send letters home to parents.

Setting

This study was conducted in a Response to Intervention setting where I worked with only the two students participating. It is a general education classroom but all students in the room were working in small groups. There were two other small groups being worked with in different areas of the classroom with separate instructors. The noise level was very low because the other groups were doing silent work. However, these graphic organizers being used can be used in general education settings also. Although these graphic organizers were used for English language arts reading passage comparison purposes, they can be adapted to fit any content area where two subjects are being compared.

Method

This study utilized a quantitative approach because it was most appropriate in order to compare test score data. There were solid data numbers that were compared. Each student participated by reading a passage at 4th grade reading level. Then, they completed a graphic

organizer using the reading passage, as their reference. They were allowed to look back in the passage in order to fill this graphic organizer out. The students were given an explanation on how to use these graphic organizers. These explanations were given each week at the beginning of the second session. This was a four-week long study where the students received the intervention three times a week in thirty minute sessions. These sessions took place every Tuesday, Wednesday, and Friday morning.

For the first two weeks of the study the students used concept maps. For the second two weeks of the study the students used Venn diagrams. Each week started with the students doing an initial reading of the weekly passage and a pre-test of their comprehension. This session took place on Tuesdays. Then, the students did a close reading of the passages while filling in the graphic organizers. This took place on Wednesdays during the second session. They were also reminded on how to use the graphic organizers at the beginning of this session. At the end of each week the students were given a short comprehension test on the passage that was read that week. This took place during the Friday morning session. The data that was collected was from that pre and post-test that the students took each week. These tests were collected and graded by myself. I used the raw score in the analysis of student grades on the pre and post-tests.

Comparison study is appropriate for this study because of the comparison of the two types of graphic organizers, concept maps and Venn diagrams. The results of the tests administered were graphed in a bar graph. The comparison of the pre-test and post-test are easily evaluated and described in this way. The results are seen more clearly in this format.

One limitation of this study was that a student may be absent on a day they were supposed to participate in this study. I only came across this limitation once during the study.

One of the participants was absent a day. The session was made up the following day during the students lunch period. The session lasted the same amount of time; it was just later in the day. It took place in a different room with one-on-one instruction. Another limitation of this study is that the effects of the study may be affected if there is a large gap of time between certain sessions. There were no long breaks during this study so that limitation was not an issue. Since the pre and post-test are the same, another potential issue is test/retest reliability. It is possible that the students knew what questions to look for in the reading passages. This did not seem like an issue in this study since both graphic organizers were given in the same way. Another limitation of this study was that these graphic organizers were only being used for comparison purposes. The use of these graphic organizers in any other way was not being tested in this study.

Findings

The data collected from this study was collected and organized into bar graphs. They were used to analyze the results from the pre-tests and post-tests from the two participants. The following findings show the comparison of percentages.

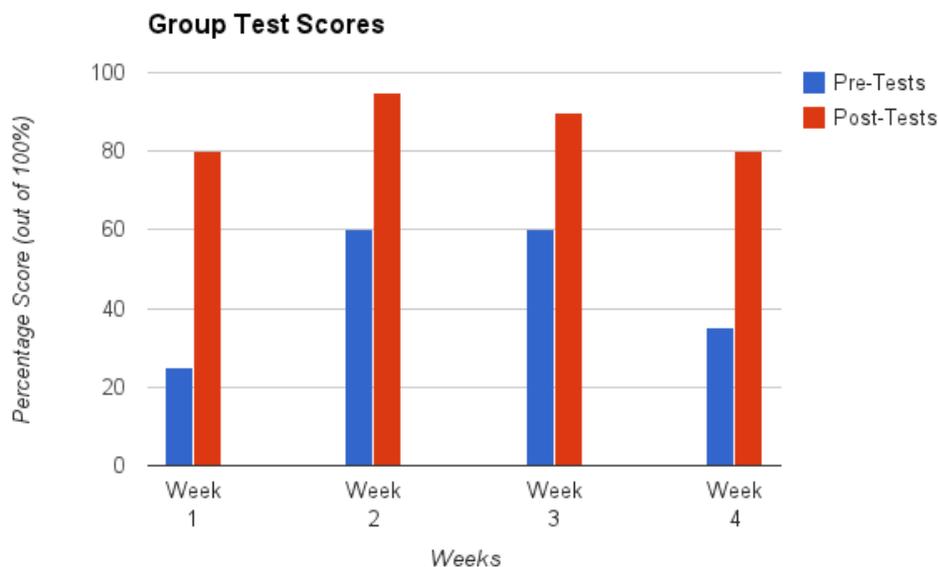
Group Findings

The use of the two graphic organizers with the group resulted in the conclusion that the use of both concept maps and Venn diagrams had positive impacts on the participants. Week 1 and week 2 of the study involved use of concept maps. In week 1, the participants' average mean score for the pre-test was 25%. The participants' average mean score for the post-test for week 1 was 80%. Week 1 of using the concept map yielded a 220% increase in their test grades. In week 2, the participants' average mean score for the pre-test was 60%. The average mean score for the

post-test was 95%. Week 2 of using the concept map provided a 58% increase in students' test scores.

Week 3 and week 4 of the study involved use of Venn diagrams. In week 3, the participants' average mean score for the pre-test was 60%. The participants' average mean score for the post-test in week 3 was 90%. Week 3 showed a 50% test score increase. In week 4 the participants had an average mean score of 35% for the pre-test. The post-test average mean score that week was 80%. Week 4 of using the Venn diagram yielded a 129% test score increase. These results can be found in figure 1.

Figure 1

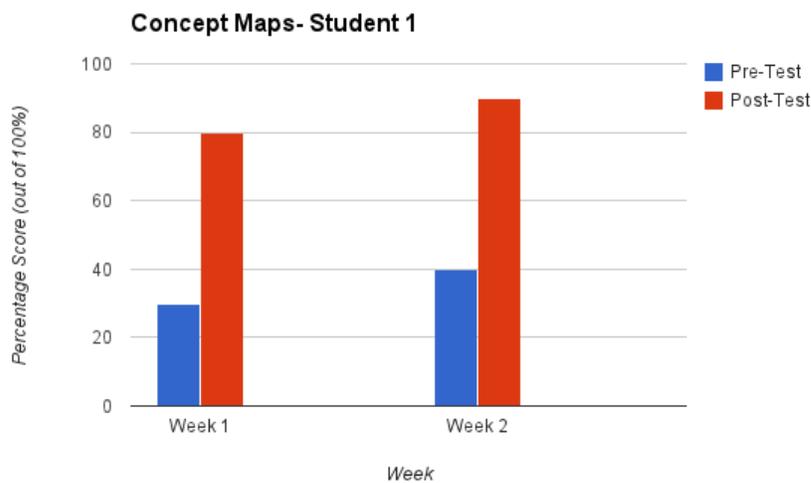


Individual Findings

Both students worked with concept maps for the first two weeks. Figure 2 displays these results. Student 1 scored a 30% on the pre-test for week 1. After the concept map was introduced

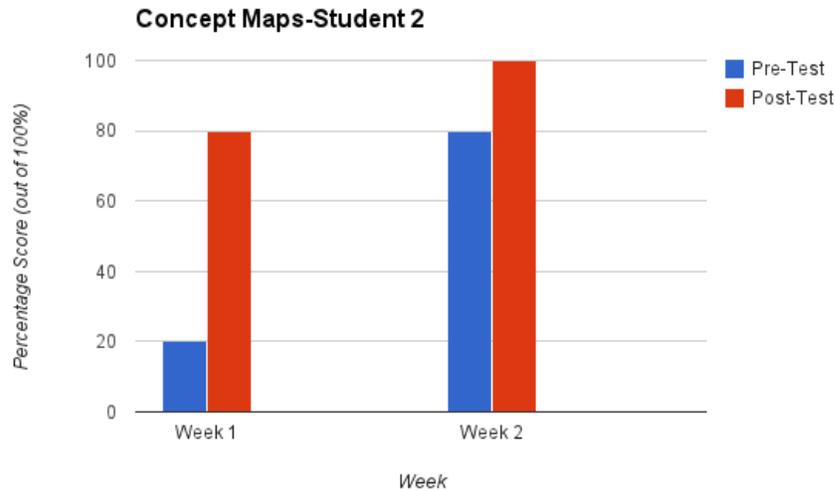
and implemented with the reading passage, the post-test was administered. Student 1 received an 80%, with a 167% increase in her test grade. Student 1 scored a 40% on week 2's pre-test. After the concept map implementation, she scored a 90% on the post-test, which was a 125% increase in her test grade.

Figure 2



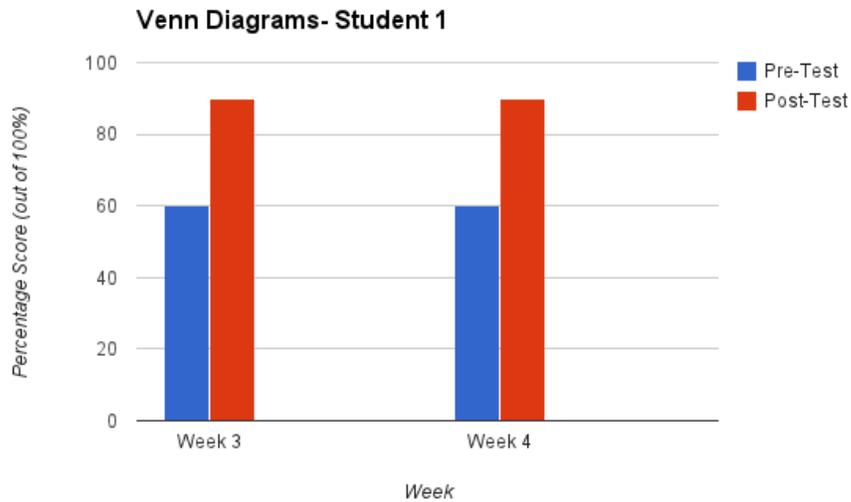
During week 1 of concept maps, student 2 scored a 20% on the pre-test. After concept map implementation with that week's reading passage, he scored 80%, which is a 300% increase in their test grade. The pre-test score for week 2 was 80%. After implementing the concept map with week 2's reading passage, student 2 scored 100% on the post-test. Week 2 had an increase of 25% in his test grade. These results can be found graphed in figure 3.

Figure 3



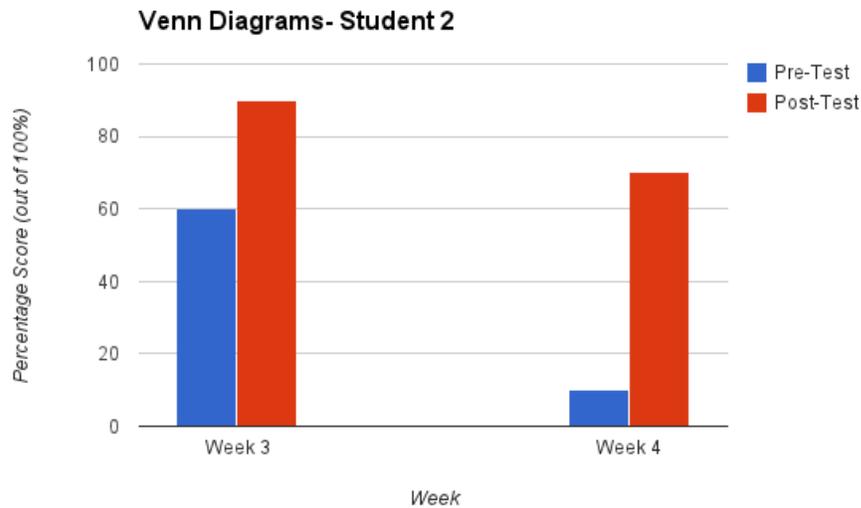
Both students 1 and 2 used Venn diagrams for weeks 3 and 4 of the study. On the pre-test for week 3, student 1 scored 60%. After the use of a Venn diagram with week 3's reading passage, student 1 scored 90%, which was a 50% test grade increase for week 3. Student 1's pre-test was 60% for week 4. The post-test score for week 4 was 90%, which was a 50% increase in her test grade. The results for these tests are found in figure 4.

Figure 4



Student 2 received 60% on the pre-test for week 3. After the Venn diagram implementation with the reading passage, the student received 90% on the post-test. Student 2 had an increase of 50% in his test score. Student 2 received 10% on week 4's pre-test. After that week's Venn diagram implementation, student 2 scored 70% on his post-test. During week 4 student 2 had an increase of 600% in his test score. Figure 5 displays these results.

Figure 5



The data during the study points to a strong conclusion that the use of graphic organizers increases student test scores. The students' test scores on Venn diagrams versus concept maps led to inconclusive results. Student 1's improvement scores were more significant with concept maps. Student 2's improvement scores were more significant with Venn diagrams. With more time and data conclusion a clearer conclusion could be met.

Discussion

The guiding research question for this study was whether Venn diagrams or concept maps are more effective in increasing student test scores. It was a hope that this study would provide insight into the benefits of using one type of graphic organizer or the other. This study ran a clear comparison between these two types of graphic organizers. Although they are both encompassed in evidence based practices, it was hoped to be determined which was more effective for these students. As the results show, both students showed a significant gain in using

both kinds of graphic organizers. The use of both Venn diagrams and story maps increased student test scores for both participants. However, there was not one graphic organizer that worked best for both students.

Interpreting Findings

The findings of this study revealed that both graphic organizers positively affected these 5th grade students' reading comprehension test grades. Analysis of the pre-test and post-test scores indicated that Venn diagrams and concept maps helped the students with recall and comprehension of passages at their current reading level. Use of these graphic organizers positively impacted the students' reading comprehension and test scores.

Hamilton (2000) found that the use of graphic organizers helped students take more accurate notes about reading passages. That in turn helped them give more accurate answers on assessments. Both of the participants in this study struggled with comprehension of passages in English Language Arts; this maybe one reason for the findings. Another reason may be that the students were familiar with one or both of these types of graphic organizers. They may have used them in the past, so the use of them again would increase their confidence, allowing them to focus more on the information and less on the technicalities of the graphic organizers.

The study led to different results for each of the two student participants. Student 1 had 167% and 125% test score increase during the weeks of using concept maps while showing only 50% test score increase both weeks of using Venn diagrams. It can be stated that concept maps had a more positive impact on Student 1's test scores. Student 2 had slightly different results. Between the two weeks of using concept maps the student's test score increase was 300% and 25%. During the two weeks of using Venn diagrams Student 2 had 50% and 600% test score

increase. The results are somewhat inconsistent but show a slightly better result when Student 2 used Venn diagrams.

Limitations

There were a few limitations in this study. One was that there were only two participants who were from a rural, non-diverse school. Another limitation was that the study was only able to be conducted for 4 weeks. Due to teacher, student, and curriculum schedules, and the time allowed for the study, less data was collected than anticipated at the onset of the study. A longer study or more sessions per week would have provided more data and possibly more clear patterns. One more limitation was that a student was absent for one of the days of a session. He made up the session on the following day, but it was in a different setting. This could have made him perform in a different way than otherwise if it had been the normal setting.

Implications for Practice

There are many implications when talking about graphic organizers being used in elementary schools. As demonstrated in this study, one use of them is in small group settings. With the small group, each child is able to be monitored and given assistance while filling them out, and gets the most out of the activities when they are using accurate information. These would be great in small groups in the general education classroom or in a self-contained classroom. If graphic organizers are being used in self-contained classrooms, and depending on the levels of the learners, they could be used with pictures instead of words.

Another implication would be the use in the whole-group general education classroom. Graphic organizers are flexible enough that they can be formatted for many different topics, in many different subject areas. In the whole-group, children could work on them independently or

with a peer. Teachers can incorporate them into weekly lessons, or as review for tests. Venn diagrams and concept maps would help to visually conceptualize the similarities and differences between topics. That understanding would lead to better assessment grades in the class.

Teachers could also send graphic organizers home as a refresher on important concepts. The teacher would need to properly introduce the graphic organizer and ensure that each child knows how to use it before sending it home. The students could fill it out at home independently as review or as a continuation of a lesson from the classroom.

Further Research

Further research should examine the students' perceptions of using graphic organizers. It is important that students are engaged in the process or it will have no benefit for them. Understanding how they feel about using graphic organizers will provide educators with information about how to tailor them to better engage and interest students. Student surveys could be distributed or interviews could be conducted to get this information.

There could also be observation done to see how elementary teachers use graphic organizers in their classrooms. Since there are so many different uses for them, it could be beneficial to see how and in what subject areas teachers use graphic organizers. There are many different options for implementation of graphic organizers so observations of the settings and content in which there are used would be beneficial for further research.

Further research could also examine how graphic organizers can be incorporated in the new curriculum models. With the new Common Core English Language Arts and math modules being implemented in so many schools, graphic organizers could be supplemented into many

lessons. Research could be done to see how teachers are incorporating them to enrich student learning.

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