

Academic Vocabulary across the Curriculum

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Abstract

This action research project examined the effect of teaching vocabulary in all content areas to sixth grade students, including regular education, English as a Second Language, Special Education, and 504 students. Academic vocabulary was taught using a program called Word Generation. Students were given five academic vocabulary words per week. Instruction occurred over those five words in each academic class, and pre and post test data was collected and analyzed. Findings proved that students learned and used the academic vocabulary better if it was taught in all core classes.

Background/Context

Action Research is a way for teachers to ask and answer questions that arise in their specific classroom and school. Teachers formulate questions, collect data that will help answer the questions, analyze the data collected, present their findings, and apply the information to their teaching to improve instruction and increase student achievement.

This Action Research was conducted by a team of sixth grade teachers in a suburban public middle school outside of Houston, Texas. The school consists of 1375 students in grades six through eight. The “team” consists of two English teachers, one with four years teaching experience and the other with ten years of teaching experience; one Science teacher with fourteen years of teaching experience; one Math teacher with five years teaching experience; and one Social Studies teacher with seventeen years of teaching experience. This team has worked together for several years. As we discussed our students, their strengths and weaknesses, and plans for their success, we realized that a major reason for the lack of success between classes and standardized testing is a lack of understanding and retention of vocabulary. The students were not struggling so much

with concepts taught to them but had trouble with vocabulary associated with instruction. We wanted to show our students that vocabulary happens in places besides the English classroom. The words they learn can be applied to all areas of their lives besides a reading and writing setting. We wanted to see if continuous instruction in all subject areas at the same time would lead to improved retention. We also hoped to see improvement in each of our academic areas by covering similar vocabulary.

Research Questions

- Does exposure to vocabulary terms in all academic areas at the same time increase retention of those terms?
- Does exposure to vocabulary terms in all academic areas at the same time increase retention of those terms for students with special needs?

“Special needs,” in this context, is defined as students who receive services from English as a Second Language (ESL), Special Education (SPED), and Section 504 (504). 504 is an antidiscrimination statute that requires school districts to provide services to students whose disabilities may limit success in the classroom.

Research on Vocabulary Instruction

In this section, we will cover studies supporting the positive impact of teaching academic vocabulary instruction simultaneously in all academic areas. The literature we found illustrated the benefits of explicit academic vocabulary instruction, described systematic practices designed for long term retention, and explained the positive impact on struggling readers.

In its study, *How Systematic Vocabulary Instruction and Expanded Learning Time Can Address the Literacy Gap* (2009), The Center for American Progress

recommends implementation of a school wide systematic vocabulary program in which existing word knowledge is measured, academic vocabulary is targeted, and learning is assessed at regular intervals. Academic vocabulary is the language of school, particularly that of textbooks. Townsend (2009) suggested that academic word knowledge has the potential to increase access to academic texts for all students, especially for English Language Learners. This language, used in all disciplines, can vary in meaning from one content area to the next. Systematic vocabulary instruction can help children learn a word's often multiple meanings and understand how a word's meaning can change in different contexts or how it is used in a particular subject area. (White & Kim 2009) This research project shows how a systematic vocabulary program implemented across academic disciplines improves retention of academic vocabulary. By routinely targeting the same specific vocabulary words in all content areas, teachers can improve retention of academic vocabulary.

The research shows students need multiple encounters with target vocabulary to demonstrate mastery. Targeted academic vocabulary words appear in textbooks and should be explicitly taught across content areas (White & Kim 2009). Academic vocabulary occurs in every subject area and can vary in meaning from subject to subject. This differs from content vocabulary where subject specific word knowledge is necessary for mastery of content objectives. Vocabulary instruction should provide multiple exposures to target words in varying contexts (McKeown & Beck 2004). With this in mind, this project shows the impact of teaching targeted academic vocabulary in all academic areas.

Systematic instruction of academic vocabulary has been found to have a positive impact on struggling readers, often English Language Learners (ELL). To begin with, vocabulary knowledge of ELLs is significantly less than that of native speakers, and with no intervention, the gap can grow (Snow 2004). While it takes two to three years for an ELL to be on grade level in conversational English, it can take five to seven years for that same student to be on grade level in academic language (Brown 2007). To close the literacy gap, struggling readers should have frequent varied exposure to high frequency academic vocabulary in multiple content areas. Townsend (2009) found that ELLs can successfully build academic knowledge through her study of Language Workshop. This research project examines the effect of daily interaction with targeted academic vocabulary in cross curricular activities.

For this Action Research, we have implemented The Word Generation vocabulary program, developed by the Strategic Education Research Partnership. The program is designed to build knowledge of high frequency academic vocabulary words through daily instructional activities in all academic areas. We chose Word Generation for this study because it provides ready made materials designed for simple implementation in all class settings with most activities fitting seamlessly into and enhancing our existing curriculum.

In its 2008 – 2009 study, Harvard Graduate School of Education evaluated gains made by students in five Boston area public schools where Word Generation was implemented. The data from these 5 schools was compared to data from three schools that did not use Word Generation. The study showed significant gains in specific word knowledge where Word Generation was implemented (White & Kim 2009). With

careful implementation of the program, we hoped to close the literacy gap between our highest and lowest achieving students.

Methodology

Participants

The participants are sixth grades students in a middle school with approximately 1375 students. The school is located in a suburban school district near Houston, Texas. The sample group consisted of 140 students. The sample group contained students with varying ability levels. Twenty six of the students are identified as “Gifted,” while 31 of the students are included in Special Education, 504, and English as Second Language (ESL) programs. The remaining 93 students are students without further identification and receiving all education in regular classroom environments.

Materials

The program that was used for this study was found at the Word Generation website. The Word Generation program is broken into 10 week blocks. For each block, five vocabulary words are introduced, taught, and evaluated. There are materials for each subject area to use in teaching the words for this study. We used most of the Word Generation materials and some of our own, and adapted for our students’ interests. Students were given a teacher generated pretest and posttest using an electronic student response system. Students received instruction on the vocabulary words in each of their academic classes from teachers on the “team” who shared the study. The “team” consists of two English teachers, one Science teacher, one Math teacher, and one Social Studies teacher. The “team” shares most of the same students so they are receiving vocabulary instruction in two or more classes. The Gifted students, however, only received

instruction during their science class. Students in Special Education received vocabulary instruction in at least two classes. Students identified as 504 received instruction in all “team” academic classes. Students in the English as Second Language (ESL) class received instruction in their ESL English class and in their other academic “team” classes.

Procedures

The procedures for this study included the introduction of five vocabulary words per week in each of the core subjects taught by a team of teachers who shared the majority of the students (See Appendix A). Students were introduced to the vocabulary words in their English classes on Monday of each week. Students read the words in context in reading passages; they made flashcards of the vocabulary words and their definitions, and took a weekly quiz over the words and their definitions each Friday. The two English classes also conducted a small competition for the number of examples of words used in context in daily sources. Students cut out their examples of the words and posted them in the hallway (see Appendix B).

In Science class, students completed sentences with vocabulary words. The sentences contained the vocabulary word used in a science context. Students were asked to fill in the missing vocabulary word and justify their answer. This took place usually on Tuesdays. The Gifted students only received instruction in the Science classroom. On Wednesdays, students used the vocabulary words in context in their Math classes. They completed an activity and discussed in their Social Studies classes on Thursday. Each teacher on the team participating in the study posted the words in their classroom or on their classroom door (see Appendix B). The words were posted in the hallway as well for students to see at all times (see Appendix B).

Data Sources

The data sources for this study were teacher made tests. The pretest and posttest were multiple choice questions where students were given the definition and asked to match it to the word. Check point quizzes were administered in students' English classes to show weekly progress. The pretest and posttest were given in the same manner in the same classroom five weeks apart.

Data Analysis

For this study, we will look at the pre-test data after the kids have taken it. We will look for any trends or words that seem especially challenging for the students. We will then informally check their progress each week during their academic classes and clear up misconceptions as we go along. The ELA teachers will give a weekly quiz to also informally monitor progress. Once we have completed the five week study, we will give the students a multiple choice post test over the words. Both the pre-test and post-test will be multiple choice questions. Students will be given a definition and asked to select the appropriate word from a list of four. Students will use an electronic response system to log their answers on both pre-test and post-test.

Analysis/Findings

Before studying the words in context in class, the average score on the pretest was 73 percent of students answering the multiple choice questions correctly. After five weeks of instruction in their academic classes, the average score on the posttest was 83 percent of students answering the multiple choice questions correctly. Students who received in context instruction in two or more academic classes showed an improvement of 10 percent (Figure 1).

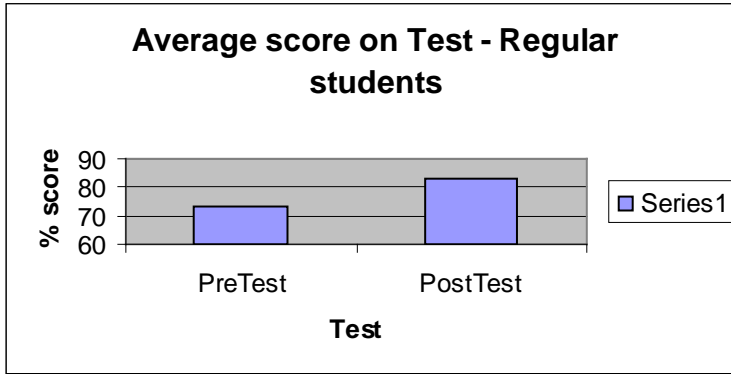


Figure 1. Average score of all students from pretest to posttest

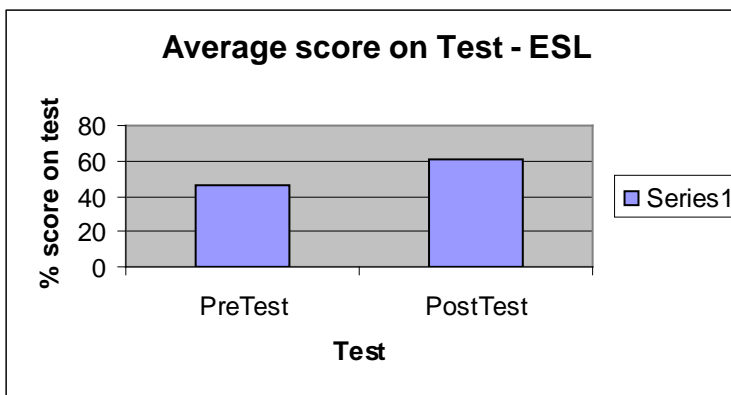


Figure 2. Average score of ESL students from pretest to posttest

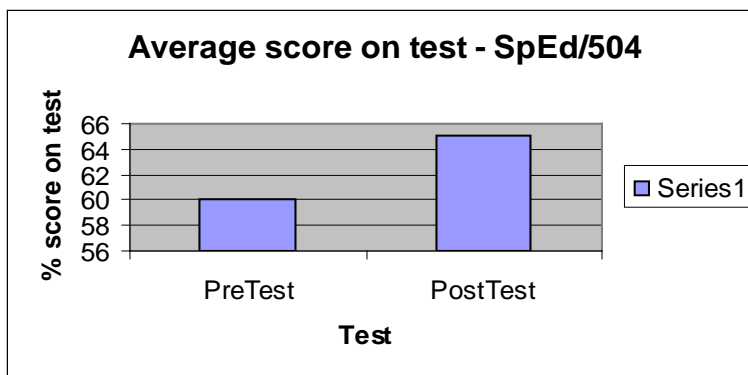


Figure 3. Average score of special education and 504 students from pretest to posttest

Students who are identified as English as Second Language (ESL) scored an average 46 percent on the pretest and jumped to 61 percent as an average score on the posttest (Figure 2). This was a growth of 15 percent. Students identified in the Special

Education and 504 programs scored an average 60 percent on the pretest and showed a growth of 5 percent on the post test scoring an average of 65 percent (Figure 3). Students in the gifted program who received instruction only one day a week in their Science class scored an 84 percent on the pretest and increased only one percentage point in a five week period scoring an 85 percent on the posttest (Figure 4).

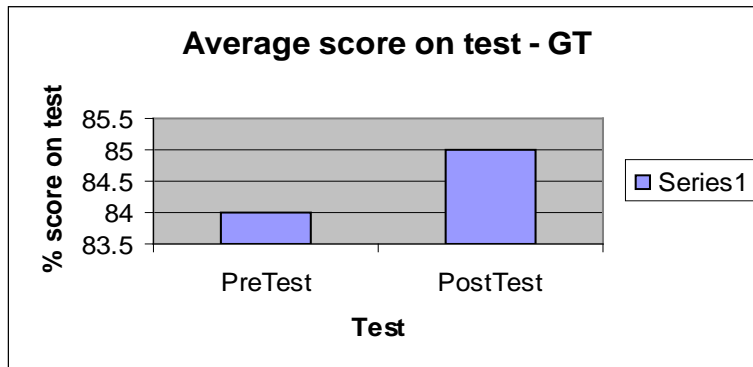


Figure 4. Average score of G/T students from pretest to posttest

Discussion

This research shows an increased level of achievement for all students when academic vocabulary is taught simultaneously in all core subject areas. While all student populations showed growth, students in the ESL program showed the most significant gains. This population, least familiar with academic English, benefited from the consistent systematic practice in each academic discipline.

The Word Generation program helped the team achieve its goal of teaching vocabulary in all content areas. The logistics of implementation were already mapped out for us; we just had to adhere to the plan. Five words a week was perfectly manageable for each teacher to incorporate into existing curricula. In many cases, the weekly words coincided with concepts we were covering in our classes as if we had purposely planned it. Word Generation also gave each teacher the opportunity to use

academic language in the context of her own discipline. This gave us the opportunity to show students how words have multiple meanings, which is a particular benefit for our special needs populations.

Although the purpose of this research was to learn whether a consistent, systematic academic vocabulary program in all content areas would improve retention, we would like to see how this type of practice would affect the entire school population. We plan to use the Word Generation concept on a school wide scale including specialized disciplines such as fine arts and physical education. This plan includes introducing the words of the week on the morning announcements, posting the words in the hallways around the school and in each classroom, and having a school wide word usage contest. We also think parent involvement would help our daily efforts. Here, we plan to inform parents about the program and the weekly words through frequent email communications.

Reflections/Action Plan

In conclusion, this research project proved the importance of academic vocabulary instruction occurring in all content areas. It also proves that students with special needs benefit significantly from being exposed to academic vocabulary words in all content areas. The team of researchers will continue to use the Word Generation program in their classrooms. Also, after examining the results of this research, the school where this project took place will implement school wide use of the Word Generation program in the future.

References

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Appendix A – Student Work

Science Writing Activity

Write a short essay on the following topic. Remember to use your vocabulary words (context, indicate, variable, create, benefit, analyze, interpret, structure, function, factor).

What characteristics are needed to be a good scientist?

One factor of a good scientist is to be able to analyze and interpret the structure or function of something. They also must create a context that indicates the variables that benefit their experiment.

1. The most important function of school is to structure, or build on our education. With education you can accomplish what you want in life. For example if you desired to become a lawyer, being able to analyze or interpret sentences could help you with contracts. For someone that wanted to be a scientist, knowing what a factor is could greatly help them. Finally, if you were a radiologist, being able to analyze the X-RAY could help to figure out what is wrong with the patient.

Paragraph

The most important function of school to me is learning how to interpret the main roles of school. Which is the subjects. And my most favorite subject is social studies. But there are some reasons why we go to school. One reason is we don't learn about the world we won't be able to be a part of the world. And I really do believe that it will help students understand the structure and way of life around them. And say one day they wanted to analyze the internet in search for ways to construct a building they would not be able to do that if they do not go to school. Also if they wanted to perform in the medical stage they would really have to go to school. And that's why I can see the function of school.



Appendix B – Procedures Figures

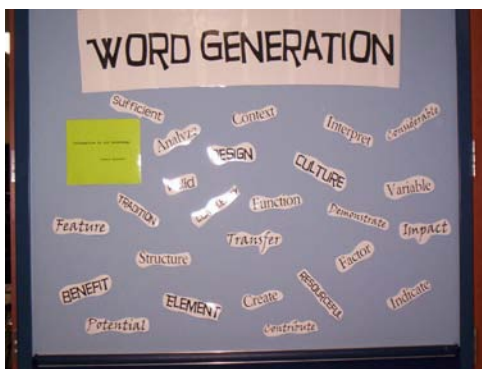
Figure 1:



Figure 2



Figure 3:



Day	Subject	Activity
Monday	ELA	Introduction of words through paragraph.
Tuesday	Science	Fill in the blank with words in Science context
Wednesday	Math	Warm-up with word(s).
Thursday	Social Studies	Discussion Activity
Friday	ELA	Quiz over the week's words.
Friday	Varying Subjects	Write using all of the week's words.

Appendix C- Pre/Post Test


Response Report


Session: WordgenWk 6-10 POST


Class: Hudson-7


Class Points Avg: 85.00 out of 100.00 (85.00%)

(Includes only students who took assessment)

1	to depend on		
	A	96%	rely
	B	0%	react
	C	4%	benefit
	D	0%	contribute
	E	0%	proportion

2	fraction, quantity, partial amount		
	A	0%	potential
	B	0%	react
	C	0%	tradition
	D	0%	justify
	E	100%	proportion

3	to respond		
	A	0%	valid
	B	96%	react
	C	0%	potential
	D	4%	justify
	E	0%	proportion

4	to defend		
	A	8%	demonstrate
	B	4%	context
	C	0%	alternative
	D	88%	justify
	E	0%	proportion