# *The Vocabulary Initiative: A Model for Vocabulary Instruction*

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## Introduction and Research Statement

The U.S. currently has wide income and racial achievement gaps in reading. The disparity between African Americans or Hispanics and Caucasians is multiple grade levels; in other words, 13-year-old Caucasians' reading scores are equivalent to those of 17-year-old Hispanics or African Americans (Family Facts 2009). While this reading gap has multiple causes, the vocabulary disparity is one of the primary drivers. These vocabulary differences are present when students begin school and only widen in each successive school year. Additionally, vocabulary understanding is critical for reading comprehension and thus success on standardized tests and ultimately success in high school and college. It is clear, therefore, that if the nation hopes to reduce the reading achievement gap and help boost college completion rates for low-income and minority Americans, the vocabulary gap must be addressed.

To address this gap in reading achievement, The Vocabulary Initiative (TVI), a non-profit organization that aims to reduce this vocabulary gap by teaching common roots, prefixes, and suffixes to fifth and sixth grade students, was founded in 2011 in Houston, Texas. This paper describes the initiative's pedagogy, a pilot program established in one school within the Houston Independent School District (HISD), and findings from an evaluation of the program. The paper is organized in the following manner: a brief literature review about the reading achievement gap and vocabulary's effect on it, a statement on the inequalities within HISD, a discussion of TVI and its teaching methods, an explanation of the pilot program and its results, and an analysis of the program's findings, limitations, and prospects for expansion.

## Literature Review

The U.S. has a significant reading achievement gap: a 25 point gap between Hispanics and Caucasians and a 21 point gap between African Americans and Caucasians (Hemphill and Vanneman 2010). Minorities are therefore on average four grades behind their Caucasian peers. These gaps are present throughout school and then manifest themselves on the Scholarship Aptitude Test (SAT), wherein Caucasians average 100 points more than African Americans and 80 points more than Hispanics on the SAT Reading section (National Center for Education Statistics 2011).

Researchers have advanced multiple in-school reasons for this achievement gap, including: lack of high-quality Pre-K (Jencks and Phillips 1998), the summer learning loss (Alexander, Entwsile, and Olson 2004), and low-quality teachers (Jackson 2009). Additionally, some have posited that out-of-school factors, such as neighborhood characteristics (Turley 2002 and Ainsworth 2002) and family background (Duncan 2011 and Lareau 1987) drive the achievement gap. One important, yet often overlooked, factor driving the achievement gap is variation in vocabulary levels. Vocabulary disparities drive the achievement gap through a two-step process. First, vocabulary is crucial for reading comprehension (Hiebert and Kamil 2005); thus, students with larger vocabularies better understand what they read while students with

limited vocabularies comprehend less material and fall behind (Blachowicz, Fisher, Ogle, and Watts-Taffe 2006). Second, minority students tend to have lower vocabulary levels as compared with Caucasian peers (Hiebert and Kamil 2005). These two facts together suggest how vocabulary affects the achievement gap: low-income and minority students tend to have smaller vocabularies than high-income and Caucasian students and thus score lower on reading exams thereby contributing to the reading achievement gap.

Several researchers have documented the effects of the vocabulary disparity on achievement scores. For example, Moats (2001) found that low-income students know nearly 15,000 fewer words upon entering school than their middle-income peers. This disparity in part causes low-income students to start kindergarten 60% behind their more wealthy peers (Lee and Burkam 2002). These vocabulary gaps then increase each academic year (Stanovich 1986), and, as expected, reading achievement gaps only widen as children become older ("The Campaign for Grade-Level Reading 2013). Finally, perhaps the strongest evidence for the inter-play between vocabulary levels and reading scores comes from the U.S. Department of Education's NAEP test. Recent NAEP data shows that students who score the highest on the reading exams also score highest on the vocabulary tests, and students who score poorly on reading assessments tend to have smaller vocabulary levels (National Center for Education Statistics 2012). Moreover, this relationship is true for all the grades tested—fourth, eighth, and eleventh. While the literature is unclear about the direction of the causation, in other words, do low vocabulary levels cause lower reading achievement or are they simply a byproduct of lower reading levels, one could reasonably posit that vocabulary levels have an effect on reading scores. If this is true, then a vocabulary intervention may help improve reading scores and ultimately reduce the broader achievement gap. This uncertainty regarding the direction of causality between vocabulary levels and reading scores necessitates a program like The Vocabulary Initiative and a study such as the one described below.

**Reading Achievement Gap in Houston Independent School District**

Building on the earlier discussion of the nationwide reading achievement gap, this section briefly discusses the educational picture in HISD. Understanding this information is essential because The Vocabulary Initiative aimed to address Houston's vocabulary gaps.

HISD has a significant reading achievement gap: in 2011 tests showed a 34 point gap between Hispanics and Caucasians, a 37 point gap between African Americans and Caucasians, and a 31 point gap between wealthy and low-income students (U.S. Department of Education 2011). In grade-level terms, low-income eighth graders and Hispanic eighth graders score virtually equal to fourth grade high-income students and fourth grade Caucasian students, respectively (U.S. Department of Education 2009). Moreover, the reading scores of African American eighth graders are not statistically greater than those of fourth grade Caucasian students (U.S. Department of Education 2009). Hispanics, African Americans, and low-income students are, therefore, nearly four grades behind Caucasian and high-income students. These gaps continue in high school and on the SAT, as Caucasian students score 143 points higher than Hispanic students and 146 points higher than African American students on the SAT Critical Reading section (Houston Independent School District 2013). The K-12 gaps coupled with SAT Score disparities contribute to the higher high school dropout rates for Hispanics and African Americans as compared with Caucasians (Texas Education Agency 2010a). These dropouts annually cost Houston $165 million in foregone wages and $16 million in lost state and local tax

revenue, not to mention the reduced upward mobility for many low-income minorities (Alliance for Excellent Education 2011). HISD, not unlike several other large urban school districts, has a wide reading achievement gap that can be narrowed by reducing vocabulary gaps.

## The Vocabulary Initiative: Mission and Teaching Methods

The Vocabulary Initiative (TVI) is a non-profit organization founded in 2011 to help address the aforementioned vocabulary and reading achievement gaps in Houston. TVI emerged after a conversation that I had with my friend, Karthik Soora, a 2011 Teach For America corps member. Soora described his teaching experience and his realization that his eleventh grade students were under-prepared for standardized tests because their vocabularies were limited. As we discussed and brainstormed ways to address this challenge, one idea that emerged was focusing on building the vocabularies of upper-elementary and junior high students that would then carry over to high school. This plan seemed somewhat more effective, scalable, and sustainable than trying to teach thousands of vocabulary words to eleventh grade students in preparation for the SAT.

TVI's mission is to reduce the vocabulary achievement gap by teaching common roots, prefixes, and suffixes to Houston's low-income fifth and sixth graders. The program addresses poor vocabulary among elementary students, which creates a negative feedback cycle — elementary students cannot understand what they are reading, leading to a loss of interest in reading, which reduces their vocabulary levels and ultimately exacerbates the vocabulary gap. TVI therefore aims to increase the vocabulary of primary students, so as to prevent the cumulative negative effects that culminate in a wide reading achievement gap.

TVI 's mission also explicitly states that the vocabulary instruction will be centered on common prefixes, suffixes, and root words. Although researchers have not agreed upon the "best" means of teaching vocabulary (McKeown and Beck 1988), TVI decided to focus on word parts for five reasons. First, it is not practical to teach directly the meanings of all the important vocabulary words. Moreover, research shows that focusing on word meanings alone "does not adequately reduce the gap between students with poor versus rich vocabularies because of the size of the gap" (Baker, Simmons, and Kameenui 1995). Second, Stahl and Shiel (1992) hypothesize that teaching word parts allows students to expand their vocabularies efficiently because each phoneme is associated with multiple words. Third, research shows that understanding word parts helps students define unknown words by breaking the word down into pieces they may know (Dale and O'Rourke 1986). Fourth, because HISD's student-body is 62% Hispanic and nearly 60% bilingual and/or English-as-a-Second language speakers, word parts often have cognates in other languages that students can leverage to build their vocabularies (Texas Education Agency 2010b). Finally, teaching prefixes and suffixes allows for students to receive continued exposure to the word parts throughout junior high and high school.

Building on these theorized benefits, TVI designed a curriculum to teach word parts to fifth and sixth grade students. As mentioned above, some existing research has documented the efficacy of teaching word parts; nevertheless, TVI's approach is unique on multiple levels. First, by creating a computer algorithm to determine the SAT's most frequent roots, prefixes, and suffixes phonemes, TVI aligned lessons with the SAT. This algorithm was created by Mr. Obi Nwabueze, a Rice University student. We decided to use this instructional method because it both helped students prepare for standardized exams such as the PSAT and the SAT and allowed TVI teachers to introduce higher-level words. Second, rather than teaching the prefixes, suffixes,

or root words in isolation, every weekly instructional unit featured news articles as the medium to teach the word part and several words using the phoneme. Selecting articles that related to students' coursework (e.g. scientific discoveries), pertinent topics (e.g. bullying), or universal musical interests (e.g. Justin Bieber) helped engage the students and generate enthusiasm for learning vocabulary.

## TVI Partnership with Ripley Charter House and Rice University

In Fall 2011, I co-founded TVI to address the reading achievement gap within HISD. TVI approached Ripley Charter House, an HISD school in a low-income neighborhood, to set up a partnership. Ripley Charter House was selected as the pilot school for several reasons. First, the school's student-body was 94% Hispanic and 96% free or reduced lunch (Education.com 2013). Because most of the students were both Hispanic and low-income, they likely had lower vocabularies than Caucasian, high-income students, and thus teaching at Ripley could help reduce the vocabulary achievement gap. Second, the school was close to Rice University, which made it convenient for Rice University students to teach classes. Third, the school had Teach For America corps members who knew TVI's co-founder and helped TVI approach Ripley Charter House's principal, Ms. Karen Elsen. Ms. Elsen agreed to form a partnership, and she assigned TVI to Ms. Laura Robinson's fifth grade class and Ms. Lauren Tolman's sixth grade class. TVI then asked Ms. Elsen and the two teachers if a pre-test and post-test could be given to measure student growth. Both teachers and the principal agreed, and TVI then gave the pre-test in September. Finally, TVI approached Rice University Professor Bob Stein to help guide the research process and advise on the research design.

My role in this partnership was four-fold. First, I helped develop the idea for and ultimately co-founded TVI. Second, I engaged the principal and teachers at Ripley House Charter School to build the partnership. Third, I taught the weekly fifth grade class. Fourth, I sought out Rice University Professor Bob Stein to advise the research project.

## TVI Pilot Program as Community-Based Research

While the term "community-based research" has several meanings, one widely accepted definition is: "A partnership of students, faculty, and community members who collaboratively engage in research with the purpose of solving a pressing community problem or effecting social change" (Strand, Marullo, Cutforth, Stoecker, and Donohue 2003, 3). The University of Notre Dame Center for Social Concerns also notes: "such research is a collaborative effort between academic researchers and non-academy based community members that aims to generate social action and positive social change" (Center for Social Concerns 2008). These two definitions suggest that community-based research has two major components: a partnership among various stakeholders and an attempt to enact positive change.

Based on these two definitions, TVI's pilot program certainly constitutes a community-based research program. Firstly, as mentioned earlier, TVI's pilot program encompassed all three key stakeholders: faculty to supervise the research, students who conducted the research, and community members who both supported the research and ensured that the project positively benefits the community. Secondly, TVI's vocabulary instruction project in low-income schools aimed to narrow the reading achievement and thus, more broadly, aimed to "generate positive social change."
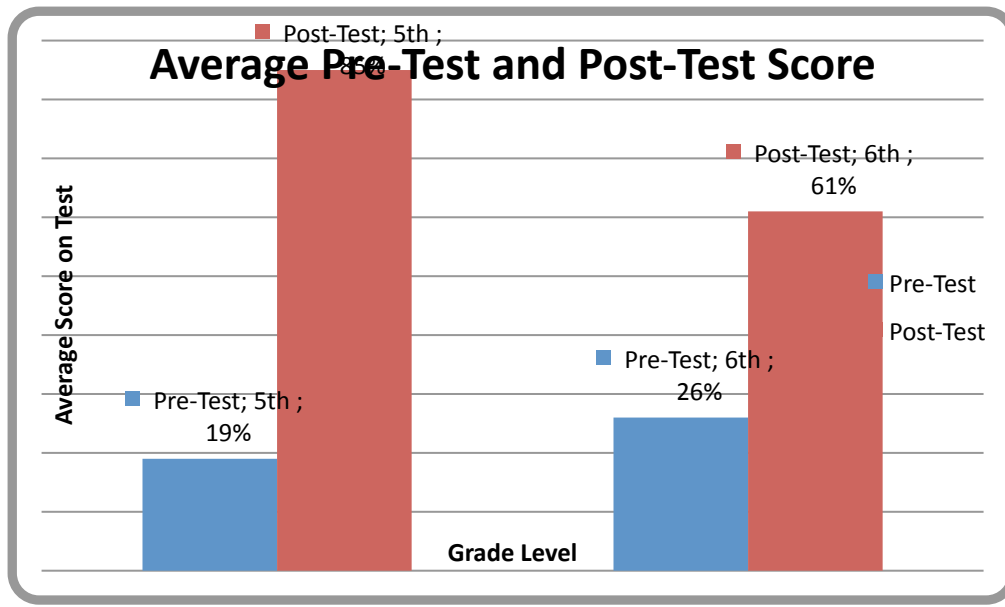
**TVI Pilot Program and Findings**

During the 2011-2012 school year, TVI launched a pilot program in one fifth grade classroom and one sixth grade classroom at Ripley House Charter School. As stated above, before the teaching began, TVI administered a pre-test which showed students at 23% proficiency in reading. The pilot program began in September 2011 and ended in May 2012. Classes were held weekly on Fridays from 7:55 a.m. – 8:40 a.m. in one fifth grade and one sixth grade class, each of which had twenty students. I taught the fifth grade class, and the sixth grade class was taught by Mr. Zain Shauk. Mr. Shauk is a young professional in the Houston-area who is a friend of TVI's co-founders.

In both classrooms, TVI used the same weekly curriculum that contained in-class readings, worksheets, and weekly quizzes. Each week's reading, worksheet, and assessment aligned to one or two word parts, which were selected from the SAT word list. After determining the root(s) to be covered, TVI selected a pertinent topic (bullying, scientific discoveries, etc.) that could serve as the theme for the week. The theme and phoneme were then used to design the reading, worksheet, and assessment. All these materials and the assessment questions were aligned to the post-test. An example of an in-class reading, a worksheet, and the weekly quiz is attached in Appendix A.

At the end of the year, TVI determined effectiveness both qualitatively—observations by the homeroom teacher—and quantitatively—number of words covered and improvement from pre-test to post-test. The results from both sources of data were extremely promising. Qualitatively, the fifth grade homeroom teacher noted that: "The Vocabulary Initiative helped my students improve their vocabularies, and this growth was evident throughout their various in-class and out-of-class assignments." Qualitatively, throughout the year, students learned over twenty word parts and 100 challenge words that will undoubtedly help them throughout school and ultimately on the SAT exam. Regarding the pre-test and post-test, both classes administered the exams to measure growth. TVI designed the pre-test based on the computer algorithm's results of the most common phonemes on the SAT. The curriculum was designed to teach these important prefixes, suffixes, and word parts.

For the fifth grade class, the pre-test was given in September 2011 and the post-test in May 2012, and our hypothesis was that post-test scores should show statistically significant increases over pre-test scores. For the sixth grade class, teaching was limited to one semester, as such, the pre-test was given in September 2011 and the post-test in December 2011. Our hypothesis was that these post-test scores should still show statistically significant increases over pre-test scores, but the growth will be lower amongst sixth graders because of the reduced instructional time. The Figure below shows the improvement in both the fifth grade and sixth grade classes. For the fifth grade class, the reading score went from a pre-test average of 19% to a post-test average of 85%. Using the fifth grade data, the differences means test between pre- and post-test scores is statistically significant (T=16.5, P<.000). For the sixth grade class, the reading score went from a pre-test average of 25% to a post-test average of 61%. Using the sixth grade data, the differences means test between pre- and post-test scores is statistically significant (T=8.9, P<.000).

**Average Pre-Test and Post-Test Score**

Post-Test; 5th ;

Post-Test; 6th ; 61%

Pre-Test

Post-Test

Pre-Test; 6th ; 26%

Pre-Test; 5th ; 19%

Average Score on Test

Grade Level

Ultimately, through both qualitative and quantitative metrics, TVI's pilot program seems to have been successful at increasing vocabulary levels.

**Analysis, Limitations, and Program Expansion**

The Vocabulary Initiative was created to help address Houston's vocabulary gap and by extension the reading achievement gap. TVI targets low-income elementary students to help prevent the negative feedback cycle that often traps certain students at below grade reading-levels. Focusing on word parts allows the organization to efficiently teach vocabulary words, as each phoneme can be leveraged into several SAT-level words. Using our curriculum, TVI launched a pilot program at Ripley House Charter School and has seen significant growth—test scores rising from a 19% pre-test average to a 85% post-test average.

The pilot program, however, did have three important limitations. First, there was no control group with which to compare the TVI classes. Second, the students at Ripley Charter House are not a random sample since their parents chose to enroll them at the school. Third, the pilot program only lasted for one year (or one semester in the sixth grade class); thus, it is unclear whether students retained vocabulary knowledge after completing the TVI classes.

Ultimately, TVI's model of using word parts to teach vocabulary to elementary school students is quite transferrable. That is, schools around the country could adopt this project, and teachers could incorporate some of the existing curriculum into their classrooms. Alternatively, the project could continue as community-based research, as students, community members, and faculty could form non-profit organizations similar to TVI and offer weekly vocabulary courses. These classes could be during school or perhaps as an afterschool program at a local community center. Finally, TVI could be launched as a service learning project, wherein college or upper high school students in a reading class lead the weekly vocabulary classes. Community members could, for example, partner directly with an English class or reading class and solicit those students to teach vocabulary. Such a model would not only benefit the community and the students receiving instruction but also the student-teachers who would better understand reading and gain more experience applying their knowledge. In the final analysis, regardless of which

method is selected, expanding TVI has potential to boost vocabulary levels among underserved students, to help close the reading achievement gap, and to play a role in expanding opportunity and securing better futures for students.

## Personal Reflection

Through my involvement in TVI, I learned several important lessons about both pedagogy specifically and service-learning generally. Inside the classroom, I learned that it is imperative to relate new material to student interests. One problem TVI initially had was students were not motivated in the vocabulary. This lack of investment manifested itself through students not paying attention during weekly lessons and thus performing poorly on the weekly quizzes. TVI brainstormed solutions to increase engagement and after discussions with the classroom teachers decided to infuse the lessons with topics to which the students could relate. This seemingly minor change had a significant impact on the weekly lessons, as students were more engaged and therefore better grasped the material.

I also learned that for educational programs, working closely with the classroom teachers is crucial. TVI engaged Ms. Tolman and Ms. Robinson throughout the process and involved them in all the lesson planning. This collaboration then allowed the two homeroom teachers to infuse their own lessons with the vocabulary words TVI taught. Moreover, the teachers also reminded students to complete their TVI homework assignments. The support TVI received from both Ms. Tolman and Ms. Robinson was essential in the positive results TVI achieved.

More broadly, in any service-learning project, it is imperative to collaborate with community partners, for they have on-the-ground experience and can provide advice about how to design and implement the project. Community leaders also know what interventions will actually help and which would just be superfluous and have little impact. Finally, and perhaps most importantly, any service-learning project is ultimately designed to serve the community. As such, community members who actually live and experience the effects of the project must be consulted throughout the process.

More important than the other lessons, TVI showed me that individual service-learning projects can make a difference in people's lives. In this case, the weekly instruction not only helped students expand their vocabularies but also introduced them to the importance of future standardized tests. In fact, I have remained in contact with multiple students, and they continually tell me that the vocabulary instruction has helped them in their current classes. Their words are constant reminders that service-learning projects can positively impact others' lives. This message is the most enduring lesson of the TVI program.

~

**APPENDIX A: Sample Curriculum Material**

The Vocabulary Initiative!
*Building words, building futures.*

Name:
Student Number:
Date:

In-class Reading on Bullying

Asher Brown's worn-out tennis shoes still sit in the living room of his Cypress-area home while his student progress report — filled with straight A's — rests on the coffee table.
The eighth-grader killed himself last week. He shot himself in the head after enduring what his mother and stepfather say was constant harassment and **malice** from four other students at Hamilton Middle School in the Cypress-Fairbanks Independent School District. The four students acted **malevolently** towards Brown since they bullied and **maligned** him because of his small size, his religion and because he did not wear designer clothes and shoes. They students also **maligned** Asher by calling him names and saying he was stupid.

The 13-year-old's parents said they had complained about the bullying to Hamilton Middle School officials during the past 18 months, but claimed their concerns fell on deaf ears.
His parents said they made several visits to the school to complain about the harassment from the **malevolent** students.

Once the bullying started, Asher's parents realized that he was always feeling very down. He never wanted to attend school or go to any events where his classmates may be present. In fact, he even started eating less and had no appetite at mealtimes; in other words, he was **malnourished**.

**Shot himself with pistol**
Brown was found dead on the floor of his stepfather's closet at the family's home in the 11700 block of Cypresswood about 4:30 p.m. Thursday. He used his stepfather's gun to kill himself. He left no note. David Truong found the teen's body when he arrived home from work.

His parents said Brown had been maligned, called names, and endured harassment from other **malevolent** students since he joined Cy-Fair ISD two years ago. As a result, he stuck with a small group of friends who suffered similar harassment from other students, his parents said.
His most recent humiliation occurred the day before his suicide, when another student tripped Brown as he walked down a flight of stairs at the school, his parents said.
When Brown hit the stairway landing and went to retrieve his book bag, the other student kicked his books everywhere and kicked Brown down the remaining flight of stairs, the Truongs said.
Durham said that incident was investigated, but turned up no witnesses or video footage to corroborate the couple's claims.

**'I hope you're happy'**
The Truongs say they just want the harassment and **malice** to stop so other students do not suffer like their son did and so another family does not have to endure such a tragedy.
"Our son is just the extreme case of what happens when (someone is) just relentlessly **malevolent**," Amy Truong said.

**Malice:**

Root Word: _____

Meaning of Root Word: _____

Meaning of Whole Word: _____

Part of Speech: _____

**Malevolently:**

Root Word: _____

Meaning of Root Word: _____

Meaning of Whole Word: _____

Part of Speech: _____

**Malign:**

Root Word: _____

Meaning of Root Word: _____

Meaning of Whole Word: _____

Part of Speech: _____

**Malnourished:**

Root Word: _____

Meaning of Root Word: _____

Meaning of Whole Word: _____

Part of Speech: _____

The Vocabulary Initiative!
*Building words, building futures.*

Name:
Student Number:
Date:

Worksheet for Week 5 2nd Semester Ripley
*Match the correct definition to each of the following words.*

_____ malign                    A. ill will, hatred

_____ malice                     B. poorly or badly nourished

_____ malevolent                 C. mean, or evil

_____ malnutritioned             D. to speak badly about someone

*What part of speech are the following words?*

1.  What part of speech is malign?

A. Noun

B. Verb

C. Adjective

D. Adverb

2. What part of speech is malice?

A. Noun

B. Verb

C. Adjective

D. Adverb

3. What part of speech is malevolent?

 A. Noun

B. Verb

C. Adjective

D. Adverb

**Write a couple sentences using either the word malice or malign explaining a time you experienced bullying or saw bullying happen.**

_____

  _____


The Vocabulary Initiative!
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Name:
Student number:
Date:

<div align="center">Week 4 Second Semester-Review Test:
Define the following words:</div>

1.    Malign:

_____
_____
_____
_____


2.    Malevolent:

_____
_____
_____
_____


3.    Malnourished:

_____
_____
_____
_____


4.    Malice:

_____
_____
_____
_____

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