



# Applied Vocabulary – state standards

For over two decades, Applied Vocabulary has been a proven link between core standards in math, science, and social studies. In 2018, *Writing to Win* became a part of the Marzano Academies, a growing network of competency-based learning centers and partnership schools.

## Teachers and instructional leaders praise ...

- ✓ the critical-thinking strategies that cultivate DOK 2-3 responses
- ✓ the alignment to all national standards
- ✓ the double-digit gains replicated in their schools.

Figure 1 presents student achievement on end-of-year state tests of math, social studies, and biology. The blue and red bars represent the percent of students meeting and exceeding grade-level expectations (proficient and distinguished learners) the two years prior to implementing Applied Vocabulary. The green bar represents the percent of students meeting and exceeding grade-level expectations with Applied Vocabulary. Three times a week students used critical-thinking strategies to write their explanations of course content in math, social studies, and biology.

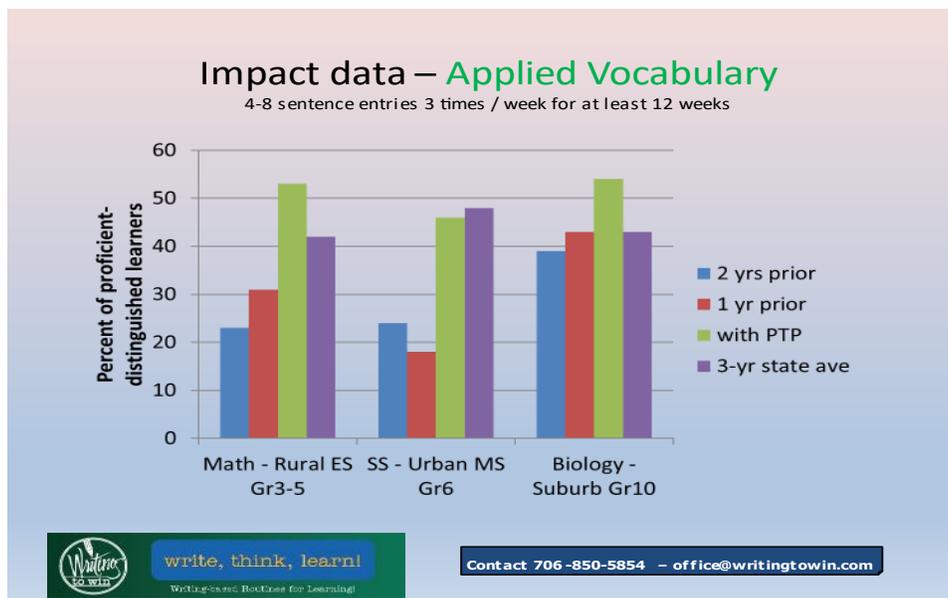
This data set includes a rural ES, urban MS, and suburban HS. All three schools posted double-digit gains the first year of implementation.

- For two years prior to Applied Vocabulary, the elementary students’ scores were significantly below the 3-year state average of 41% at 22% and 31%. With Applied Vocabulary, their 51% percent of proficient and distinguished math learners exceeded the state average by 11%.
- Similarly, prior to Applied Vocabulary, the middle-school students’ scores were significantly below the 3-year state average of 47% at 23% and 18%. With Applied Vocabulary, the students’ scores came within 2% of the state average.
- Once again, prior to Applied Vocabulary, the high-school students’ scores missed the 3-year state average of 42% by 3% and 1%. With Applied Vocabulary, their 52% of proficient biology learners exceeded the state average by 10%.

Figure 1

### Applied Vocabulary Boosts

ELA, math, Pathways, science, and social studies scores



Go to [www.writingtowin.com](http://www.writingtowin.com) for a description of the research design and methodology.

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## Classroom action research design

In schools, **action research** refers to evaluative, investigative, or analytical research to diagnose problems or weaknesses – whether organizational, academic, or instructional – and help educators develop practical solutions to address them quickly and efficiently.

**Action research** has a positive effect for many reasons. The most important is that **action research** is always relevant to the participants. Performance data is available to students and teachers in time for them to celebrate their achievement together. At the beginning of the study, the experimental groups of students learn of the performance of students in the two years previous to them and the mean score of students statewide over the last two years. They are then invited to participate in creating a shared vision of their performance at the end of the course / year with their teachers. Their teachers introduce the Applied Vocabulary instructional solution as their vehicle for achieving that shared vision.

**Our main purpose is to instill reflective practices in teaching and learning in schools we serve. These proven practices have lessened the problem of retaining the content taught in ELA, math, science, and social studies beyond a unit or end-of-year / course test.**

**Question** – What is the effect of Applied Vocabulary on student learning as measured by an end-of-year / course texts, Georgia Milestones? For the answer see Figure 1.

## Review of the Literature

We chose the study of Applied Vocabulary because it focuses on deepening understanding of course standards through the use of critical-thinking writing strategies. It is possible, then, to attribute changes in student achievement to definable practices.

**“Writing for Content Learning,” *Writing Next*, Alliance for Excellent Education**

**Graham, Steve; Perin, Dolores (Eds.)**

*Effective Strategies for Improving Writing of Adolescents*, January 2007

Research has shown that Writing for Content Learning in the study of math, science, and social studies has a significant, positive impact on student scores on state tests of knowledge. Especially in math courses, writing deepens students’ understanding of the key terms used in math. A variety of writing prompts, followed by analysis, revision, and feedback with evaluation rubrics aid increased comprehension, thinking, and memory.

**“Six Critical School-Success Factors”**

**Reeves, Douglas**

*American School Board Journal*, 2016

“Few activities have a greater and more consistent positive impact on every other discipline than nonfiction writing,” says Reeves. “Description, persuasion, and analysis help students at every level improve thinking, reasoning, and analytical skills.” Students need to do a great deal more of this kind of writing in school, he says – and get feedback on it.

The **90-90-90** schools research report identifies *nonfiction writing assessment* as the common instructional strategy of its 228 school sites. The writing occurred daily in every course of study. Each week students returned to one of their short writings and with coaching revised it significantly. There is no indication that the writing was more than freely written reflections on the lesson of the day. Missing ingredients in the 90-90-90 study included 1) precisely defined writing prompts and strategies, 2) concrete learning targets for the writing, and 3) differentiated expectations represented in proficiency scales.

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## Methodology

**We chose an experimental-control group design** that included the study of standards-based lessons with student entries

written

self- and peer-assessed

self-recorded in a daily Log of Entries.

The design required the study to fit within the school scheduling to make the data generated as reliable as possible and instructive for the teachers and students involved.

**High school students** in the control groups received 7.5 hours of instruction weekly with the district adopted textbook series guided by their district curriculum. Experimental-group students received the same instruction with one hour / week embedded for short frequent writing (three 20-minute time blocks).

**Middle and elementary school students** in control groups received 5-10 hours of instruction weekly with the district adopted textbooks guided by their district curriculum guide. Experimental-group students received the same instruction except for an average of one hour (three 20-minutes time blocks) of written responses and rubric-based self- and peer-assessment.

**Equivalent groups of students** – For each study we identified control and experiment groups. All student groups were similar to prior groups based on standard measures of student achievement. For example, we compared the experimental group of students in winter-spring 2019 with control groups of students in winter-spring 2017 and 2018. In each group there were between 19-21% advanced, 59-61% average, and 20-22% low-performing students.

**Georgia Milestones for ELA, math, science, or social studies was the independent measure** that generated a mean score for all student groups. The mean scores for the control group at grades 3, 6, and 9 were all significantly lower than the experimental groups. The experimental groups for all three grade levels exceeded the expectations of their shared visions. All three envisioned their scores exceeding the state mean score in the single digits, not the double-digit gains posted.

In all three schools, growth in student achievement of the experimental groups on the math (grades 3-5), social studies (grade 6), and biology (grade 10) subtests of Georgia Milestones exceeded the control groups by 6% to 22%. The lower the students' score before our study, the greater the increase. In 6<sup>th</sup> grade social studies before systematic Writing on Demand, student scores lagged 30% behind the state average. In a single year, the scores of an equivalent student group made up for all but 2% of that deficit. A gain of 21% in 3<sup>rd</sup> grade math pushed student 10% ahead of the state average. A gain of 11% moved average-performing 10<sup>th</sup> grade biology students 10% ahead of the state average.