



# **A paradigm shift for integrating reading and writing in three elements**

empowering schools and districts to collect reliable data

## **A call for a response**

### ***paradigm shift***

: a fundamental change in approach and underlying assumptions that happens when the usual way of thinking about or doing something is replaced by a new and different way.

// Recent reading research triggers a paradigm shift in our understanding of reading and writing.

### **Warren E. Combs, Ph.D.**

Founder of *Writing to Win* integrated reading-writing routines. Served on graduate faculties of University of Georgia in Athens, Mercer University in Macon, and Western Washington University.

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### The current approach

Teach *Reading First* (2002), then later focus on *Writing Next* (2007)  
The National Report Card (2019-2020)

### The paradigm-shift

**Research base** – Interactive reading-writing instruction in which students write as much as they read in all elements of literacy instruction. The latest research in integrated reading and writing over 15 years concludes

*The central idea of the interactive dynamic literacy model is that reading and writing are inter-related, developing together, largely due to a shared constellation of skills and knowledge.*

– YG Kim, *Interactive Dynamic Literacy Model: An Integrative Theoretical Framework for Reading-Writing Relations, Spring Nature – Switzerland, 2020.*

**Evidence base** – Since 2000, the team at *Writing to Win* integrated reading-writing routines has worked with K12 teachers in 10 states to identify, define, and test three instructional routines that fully integrate reading-writing in three elements of literacy.

Sentence	Building, combining, and linking sentences – Applied Grammar Online
Short texts	Vocabulary building in short writing – Applied Vocabulary Online
Full texts	Responding to multiple reading texts – Applied Reading and Writing



## Executive Summary

Since 2002, the *Writing to Win* team has aligned with the principles of classroom action research. The idea arose among curriculum directors we currently worked with in several states. They wanted a professional development sequence that generated student performance data in their schools with their students. They knew the importance of research-based programs based on studies reported in peer-reviewed journals. In their experience, however, reports based on student populations not fully known didn't ensure those programs worked with their teachers and students. They also noted that the National Report Card showed flat-lined scores in all subject areas in schools that used research-based instructional programs since 1992.

It took intentional planning to ensure that the principles of classroom action research were in place in every initiative (see pp. 13, 16, and 18). Student and teacher agency were key features of the design. **At the beginning of the study, the experimental groups of students learned about the performance of students from the two years before them and the mean score of students statewide over the last three years. Their teachers, then, invited them to participate in creating a shared vision of their performance at the end of the course / year.** The additional effort paid off. We received reports of double-digit gains in student performance on tests of state standards in all content areas. To be sure, we checked the validity of those reports and found that over 90% of the school reporting verified their leaders used comparable student groups with equivalent numbers of average, high, and low-performing students. Additionally, several dissertation studies were based on *Writing to Win* initiatives and confirmed the efficacy of our instructional routines in all content areas. Notably, Paine (2013) reported that the significant increases in student performance were sustained for at least six years after training in over a dozen middle and high schools.

It was clear that the three *Writing to Win* integrated reading-writing routines had predictable efficacy for student performance on state tests of standards across the curriculum. Since 2007 the *Writing to Win* action research design has produced reliable impact data the

first year of implementation in time for schools to make changes in teacher and student placement for the subsequent year.

We invite your comments and suggestions for ways to improve this action research design that local leaders of *Writing to Win* implementations have learned to trust.

This paper, then, is a brief narrative of the evolution of three instructional routines born of the classroom among teachers from over 380 K-12 schools in eight U.S. states. Since 2000, teachers clearly state that their **current resources help them present the content of course standards.**

Yet they readily admit that **most students show little use of the language patterns, course vocabulary, or the steps of the writing process on unit tests or state assessments.**

They call this a problem with learning retention. So they go in search of a solution for enhancing student engagement with their adopted materials and practices.

They find that the critical-thinking activities in their resources engage a number of their students, but they need ones that reach all students. On the internet they see ideas for critical thinking that remind them to prompt students to show similarities and / or differences, break a concept into its parts, categorize a collection of things, or explain the value or worth of something.



These are all worthy suggestions, yet ones educators have recommended for years. *Writing to Win* integrated reading-writing routines energize general strategies like these with a **toolkit of specific reading-writing strategies, ones that prompt students to write as much as they read in every work session.** Student engagement is ensured by these Five Key Practices of instruction. Teachers find these habits take deliberate intention to develop but find they make student learning more visible.

1. Quantify teacher expectations.	<b>Teacher Clarity</b>
2. Model teacher writing.	
3. Guide student choices.	
4. Secure rubric-based self-assessment.	<b>Student Outcomes</b>
5. Prompt students to respond to each other's writing.	

The first three Key Practices establish **teacher clarity** while the last two document real-time observable **student outcomes**. With this systematic approach to reading-writing integration, we help students show teachers what they understand from their instruction. When teachers understand precisely what students have learned, they can more accurately talk about matters of learning retention.

The current editions of *Writing to Win* integrated reading-writing routines are new educational products\* developed by Dr. Warren Combs, an educational researcher and former University of Georgia professor. **Applied Grammar Online** and **Applied Vocabulary Online** were well-proven print products re-imagined on online platforms for in-class, now virtual, and home-based learning. **Applied Reading and Writing** extracted the tools and strategies from a full-blown reading and writing curriculum that have the greatest efficacy.

These three routines offer a systematic focus on vocabulary, following strategies that include characteristics of

- Robert Marzano's (2005) six-step vocabulary process. According to John Hattie (2008), the effect size of vocabulary programs on student achievement is 0.67 where the hinge point of significance is 0.40.

- The sentence-combining strategy. Steve Graham (2007) identifies sentence combining, the essential strategy underlying Applied Grammar Online, as one of 11 essential writing strategies of an effective writing program. He notes five recent studies with an effect size of .50 with a hinge point of 0.10 significance.
- A systematic integration of reading comprehension and the writing process to support students' response to paired texts. According to Hattie, this emphasis on planning, revising, and editing has an effect size of 0.44 where a hinge point of 0.40 is significant. Graham reports that writing strategies for planning, revising, and editing produce an effect size of 0.82 where 0.10 is significant.

The three *Writing to Win* instructional routines use a PALS (Peer-Assisted Learning System) protocol which *What Works Clearinghouse* (U.S. Department of Education, 2012) reports has a positive effect on reading fluency, comprehension, and writing. Mathes and Fuchs (2019) provide the most recent of many studies of systematic peer tutoring with an effect size of 0.36 with a hinge point of 0.10 significance.

\*Development of the current *Writing to Win* routines: 2015-17, design testing (6,240 students); 2017-18, beta test (9,000 students); 2018-2019, paid pilots (9,660 students)



*Writing to Win* client schools set bold goals for student achievement on end-of-year assessments. Teachers who implement their training with fidelity consistently post double-digit gains on their state assessment. The impact on tests of state standards in the four core content areas in several states include

Content area impacted	<i>Writing to Win</i> integrated reading-writing routine
Reading Writing Vocabulary Language	Applied Grammar Online and in print Applied Reading and Writing
Math	Applied Vocabulary Online and in print
Science Social Studies	Applied Vocabulary Online and in print Applied Reading and Writing

The impact of implementing *Writing to Win* routines go much deeper than an overall gain of percent on high-stakes tests. Its action research design empowers client schools to chart student achievement teacher by teacher. The data identifies teachers suitable to become model classroom teachers and those in need of peer-support. For example, eight schools set a district goal of a 5% increase in grades 3-8 student achievement on ELA assessment and missed it by 0.4%. When the grade 4 data were factored out, the district goal was exceeded by 2.3 percent. That was a much more accurate and encouraging presentation of impact to present to the district board of education (white paper, Amy Denty, *Writing to Win* Applied Reading and Writing Project Report to the Wayne County School System).

*Writing to Win* client schools are also encouraged to identify a subgroup of students with which to conduct a case study or targeted experimental study. One example focused on grade 9 remedial readers who used a popular online remedial reading program that follows the Reading First–Writing Next approach in grades 7 and 8. At the end of grade 8, 96% of the students still scored as beginning or developing ELA learners (in a continuum of beginning, developing, proficient, and distinguished learners); all but 4% were still in need of intensive remediation. With the completion of a Paired Texts Packet each quarter for six quarters, 49% of them scored as proficient or distinguished learners (p. 16).

#### References

Graham, Steve (2007). *Writing Next: Effective Strategies to Improve Writing of Adolescents in Middle and High Schools*, commissioned by Carnegie Corporation of New York and published by the Alliance for Excellent Education

Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.

Marzano, R. J. & Pickering, D. J. (2005). *Building academic vocabulary*. Los Angeles, CA: Association for Supervision and Curriculum Development.

Patricia G. Mathes & Lynn S. Fuchs (1994). *The Efficacy of Peer Tutoring in Reading for Students with Mild Disabilities: A Best-Evidence Synthesis*, *School Psychology Review*, 23:1, 59-80, DOI: [10.1080/02796015.1994.12085695](https://doi.org/10.1080/02796015.1994.12085695)

U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse. (2012). *Peer-Assisted Learning Strategies*. Retrieved from <http://ies.ed.gov>.



## The Impact of Current Approaches

### Overview

The presentation of the National Report Card in 2019 speaks for itself. In the words of Sandy Kress, a lawyer and senior education adviser to President George W. Bush.

### *Shame on us*

As I predicted a week ago, the NAEP results for 2019 are stagnant. But what's most disappointing is that the nation has gone nowhere in the last ten years.

#### **It's truly been a lost decade.**

Look at 4th grade math, for example. Scale scores rose to 240 in 2009 from 226 in 2000, yet they went up only one point from 2009 to 2019. In 8th grade math, scores went up to 283 in 2009 from 273 in 2000; yet they declined one point in 2019 from 2009. In 4th grade reading, scores went up eight points between 2000 and 2009 and declined one point between 2009 and 2019. 8th grade reading has been flat throughout the entire period.



Most worrisome, however, has been the trend in recent years of drops in performance among low-performing students. All this after we saw particularly good gains with them from 2000 to 2009. The only group to experience more than marginal gains in recent years has been students in the top 10th percentile. Indeed, the gap-narrowing we saw in the 2000s may have turned into gap-widening in the 2010s.

Finally, while we saw good drops in “below basic” and increases in “proficient” from 2000 to 2009, there was virtually no improvement in either category from 2009 to 2019. We don’t insist upon or promote practice proven to increase achievement. We don’t generally tie increased funding to what works. We haven’t altogether abandoned the elements of accountability, but neither have we kept it strong or made it work better. We continue to encourage some constructive choice but not enough, or effectively, to generate much in the way of gains.

Bottom line: everyone claims to care about education. But, if NAEP, the nation’s yardstick, is to be believed, and I think it should be, we don’t care enough about it to have made any gains in 10 years. Shame on us; yet how much of a story will our national failure be? And after the newspapers covering this story become kitty litter, will anything change?

When President George W. Bush (R) and Senator Edward Kennedy (D) sat together and pledged to shake things up, you sort of had the feeling something would change, and for the better. Who’s having such conversations today?

Others echo Mr. Kress' assessment and move the analysis one step further to a call for action. The two most forceful directives remind us exactly what all teachers should be doing all along.



*Susanna Loeb, is professor of education at Brown University and director of its Annenberg Institute tells us the data are clear.*

### ***Focus on the lowest-performing students***

Now that the NAEP scores are out, we can turn from the prediction to interpretation, much surer footing for me. While headlines are emphasizing the lack of progress in average scores –

'No Progress' Seen in Reading or Math on Nation's Report Card,"

*EdWeek* or, "A 'Disturbing' Assessment: Sagging Reading Scores, Particularly for Eighth Graders, Headline 2019's Disappointing NAEP Results," *The74*, the story to me is the continued fall in achievement of our lowest-performing students. Our high scorers have not seen meaningful dips. In fact, their scores have increased across the board over the last decade. In 2009, the highest ten percent of students scored an average of 264 and 305 in 4th and 8th grade reading, respectively. In 2017 those numbers were up to 267 and 310. While in 2019 these numbers dipped slightly to 266 and 309, they still show an increase relative to the 2009 scores. Similarly, in math in 2009, the highest ten percent of students scored an average of 275 and 329 in 4th and 8th grade math, respectively. In 2017 those numbers were again up to 279 and 333. In 2019 these numbers were 280 and 333, still showing an increase relative to the 2009 scores.

For the lowest ten percent of students, however, scores have dropped across the board. The scores were 175 and 219 in 4th and 8th grade reading in 2009; by 2017 they had dropped to 171 and 219; and, over the past two years, they dropped further to 168 and 213. In math, the trends are similar: the scores were 202 and 236 in 4th and 8th grade math in 2009; dropping to 198 and 233 in 2017 and dropping even lower at 199 and 231 in 2019.

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*Paul E. Peterson, the Henry Lee Shattuck Professor of Government and director of the Program on Education Policy and Governance at Harvard University, a senior fellow at the Hoover Institution at Stanford University, and senior editor of Education Next declares that it is ...*

## **Time for a return to accountability**

**In the first decade of the 21st Century, white, black, and Hispanic student performance was on the rise, but in the second decade those gains have ground to a halt with even hints of decline in reading. The shift corresponds almost exactly with the abandonment of effective enforcement of the accountability system put into place by No Child Left Behind. Clearly, now is the time to put accountability policy back on the nation's educational agenda.**



# Reading

Reading is where many of the federal dollars for improving schools and student performance are spent. Over one billion dollars funded *No Child Left Behind* in 2002, and the funding has not stopped. There is a real concern that so much money continues to flow to schools for reading with literally no accountability for return on investment. Even the rise in performance of the top 10% of students is modest. As long as we are seeking to become better at delivering the current approach to teaching reading, we can expect more of these headlines.

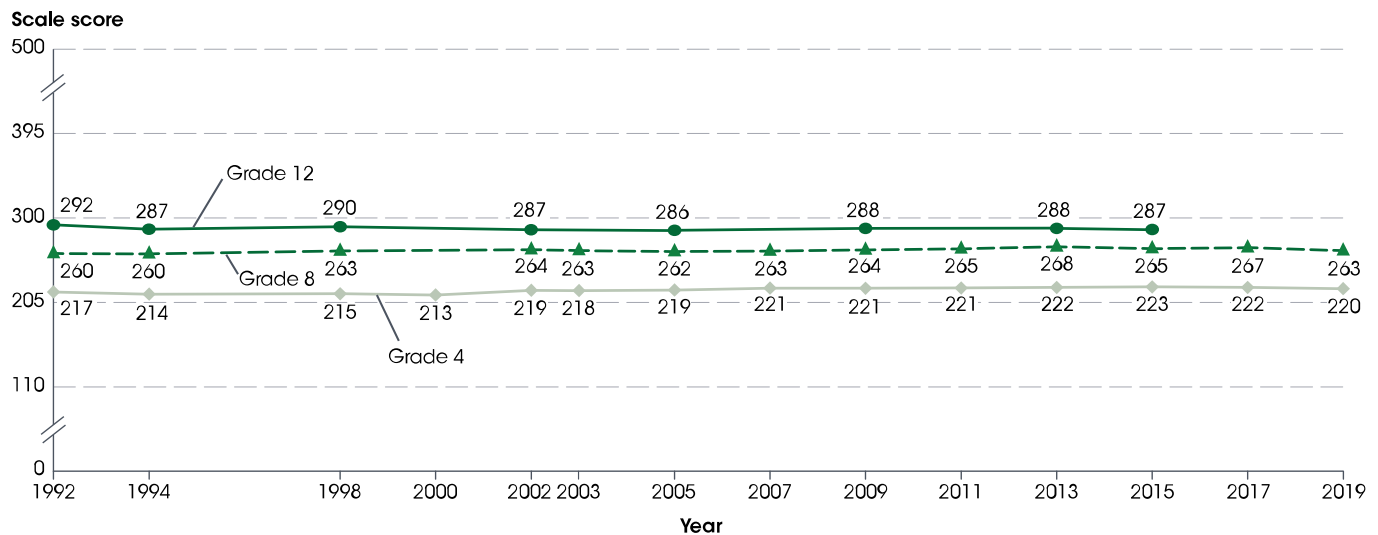
## Across the Board, Scores Drop in Math and Reading for U.S. Students

The latest results from the Nation's Report Card show declines in student performance across demographics.

– US News and World Report, October 30, 2019

Unfortunately, stagnant reading scores have been posting from the mid-1990s. Figure 1 shows a +3 gain in 27 years, an actual 5-point decline in the last six years.

Figure 1  
Across the Board, Scores Drop in Math and Reading for U.S. Students



<https://nces.ed.gov/fastfacts/display.asp?id=147>

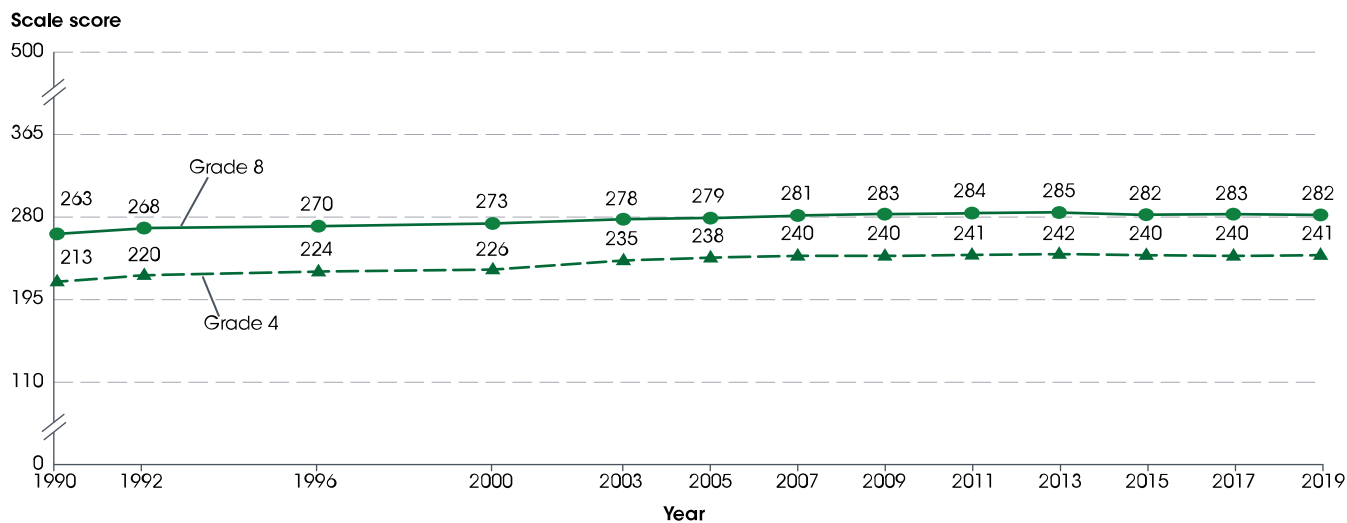




## Math

Math scores fare a little better. While the National Council of Teachers of Mathematics show an incredible adherence to the latest developments in writing and the teaching of mathematics, the textbooks that teachers are required to use in class blunt innovative approaches to learning.

Figure 2  
Trends in NAEP Mathematics Scale Scores by Grade: 1990-2017

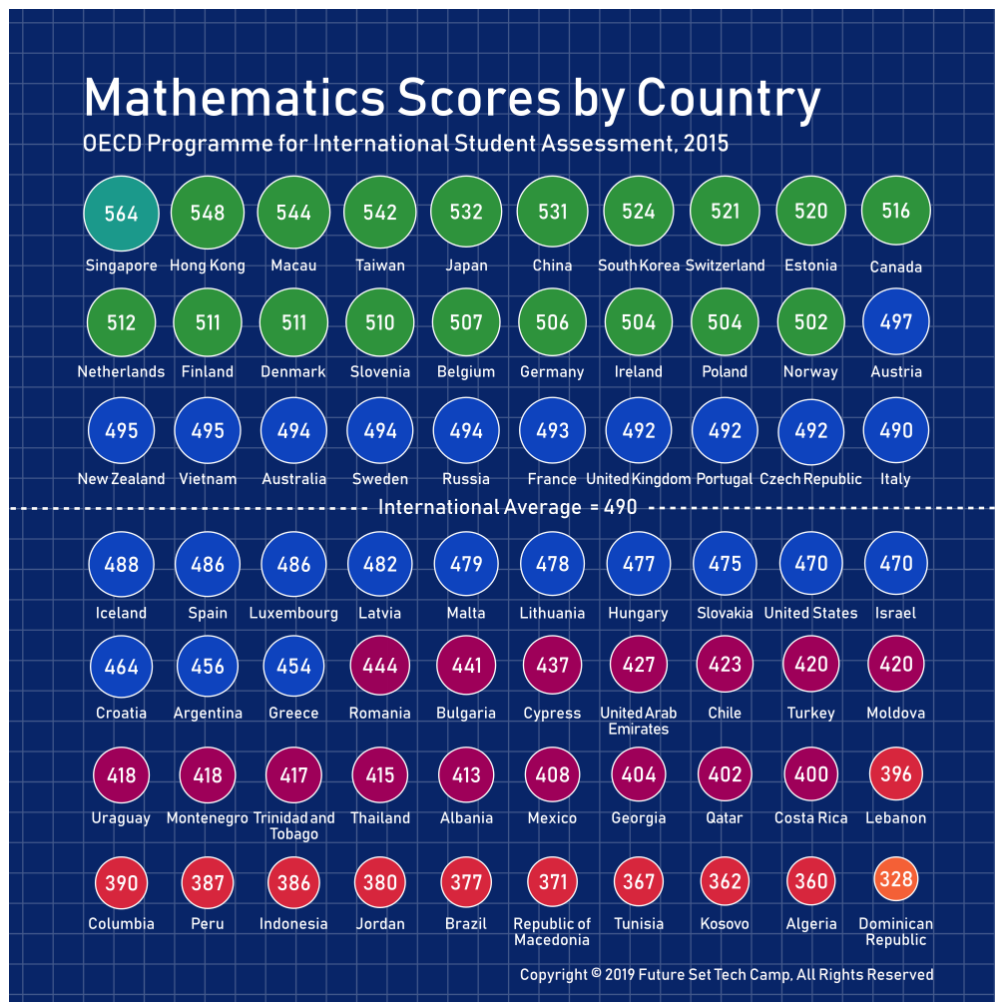


<https://nces.ed.gov/fastfacts/display.asp?id=514>



Of even more concern is how U.S. students stack up with students from other developed countries.

Figure 3  
Mathematics scores of U.S. students compared to 80 other countries



<https://futuresetcamp.com/blog/2019/4/28/infographic-mathematics-scores-by-country>

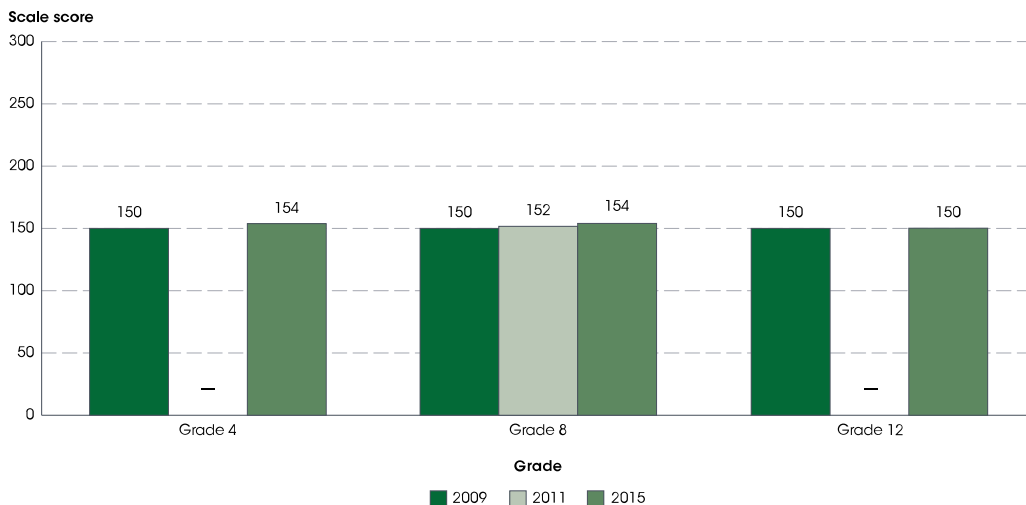
Yes, in this chart from 2015, the U.S. is the blue token in row 4 second from the right with a score of 470, 20 points below the international average and lower than 38 developed nations. Since 2015, the U.S. has moved to 30th position, but not because U.S. students' scores have increased significantly.



## Science

The report is slightly more encouraging for science. U.S. students fare a bit better than students from other developed countries, ranking in the top 10 in the group of 80 developed countries. Leaders from the other countries point to U.S. schools providing better-equipped science classrooms with instruments that provide hands-on learning.

Figure 4  
Stagnant science schools for grades 4, 8, and 12



[https://nces.ed.gov/programs/coe/indicator\\_cne.asp](https://nces.ed.gov/programs/coe/indicator_cne.asp)

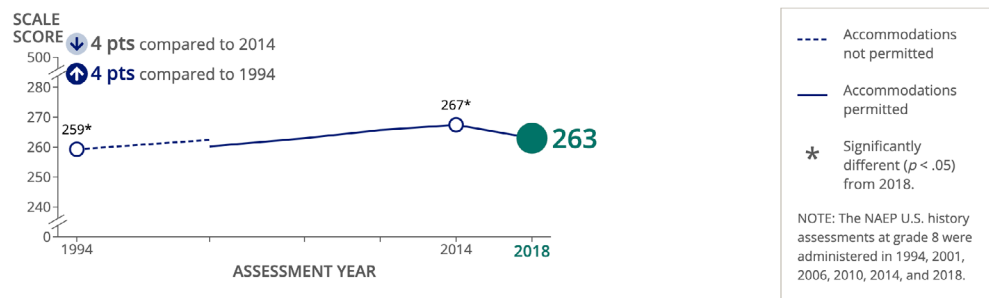
## Social Studies

The gentle rise in scores in the first decade of the 21st-century eroded in 2014 with the last national test of U.S. history. Scores for grades 4 and 12 are virtually identical.

Figure 5  
Lower U.S. History Average Score for 8th Graders compared to 2014

Score decrease reflected across all selected percentile levels except the highest

FIGURE | Trend in eighth-grade NAEP U.S. history average scores



The story of student performance in all four core subjects becomes tedious to tell. There is truly little to celebrate in the telling.

<https://www.nationsreportcard.gov/highlights/ushistory/2018/>



# Impact of the Paradigm Shift

## Overview

The solution for stagnant, flatlined scores is clear. Stop separating reading instruction from writing. Reading and writing are the flip sides of the same literacy coin. They exist and work together naturally. The read first-write next habit disrupts the natural acquisition of reading and writing in student development. We have known this since the work of John Flavell, a foundational researcher in meta-cognition and author of *The Developmental Psychology of Jean Piaget* in 1963.

In the last 15 years, a new wave of reading researchers is returning us to the recognition of the natural development of reading and writing together in human development. The following research maps the precise integration of listening and speaking in the acquisition of language in young children.

### Recent reading research on a full integration of reading and writing practices

- Kim (2020). "Interactive Dynamic Literacy asserts the relations of reading and writing among all component literacy skills," *Springer Nature e-book*. The model asserts the central relations of reading and writing among all component literacy skills.
- Kinsch (2013). "Revisiting the construction-integrations model of text comprehension," *Theoretical Model of the Process of Reading*. Readers must grasp the meaning of the sentences and the links between them (microstructure) to recognize the themes developed and the order of ideas.
- Turcott and Caron (2020). "Better Together: combining reading and writing instruction," *Literacy Research and Instruction*. Reading and writing at the sentence level work best when they are combined in the same instructional activity.
- Williams (2005). "Instruction of reading: a focus on text structures," *Journal of Special Education*. Comprehending text structure depends on many interwoven elements.
- Williams (2014). "An intervention to improve comprehension of cause-effect through expository texts," *Journal of Educational Psychology*. Understanding and expressing ideas effectively requires appropriate word choice and good syntax as well of appropriate text structure.

In the work of the *Writing to Win* team and hundreds of teachers from eight states over the last two decades, three fully integrated reading-writing routines have emerged at three concrete traditional elements of literacy.

The literacy element	The integrated reading-writing routine
Sentences	<b>Applied Grammar Online</b> – students analyze and create new combined sentences
Short texts	<b>Applied Vocabulary Online</b> – students analyze and create short texts
Full texts	<b>Applied Reading and Writing</b> – students analyze, compare, and create full texts

The development of the current *Writing to Win* routines has been intentional and thorough. Design and testing individual components of all three routines included 6,240 K-12 students during two academic school years, 2015-17. Beta testing followed in 2017-2018 and impacted student scores on tests of state standards of over 9,000 students on state tests of standards in ELA, math, science, and social studies. Helpful suggestions from teachers prompted edits of the products for paid pilots during the 2018-2019 school year. Figures 6-9 of this report present examples of significant student growth in the pilot.



## Applied Grammar Online

*Writing to Win* Applied Grammar Online has become the proven link between language study and double-digit growth on state ELA and writing assessments. Among our clients are the Marzano Academies, a growing network of competency-based learning centers and many partnership schools that include *Writing to Win* Applied Grammar in their curriculum.

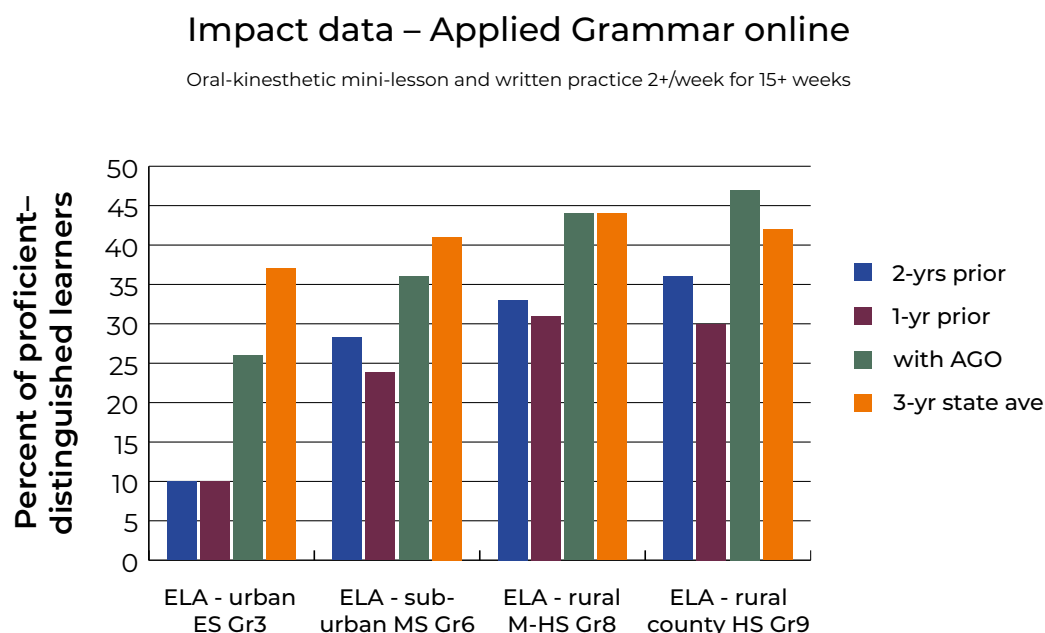
Figure 6 presents recent achievement scores on end-of-year assessment of ELA (language, vocabulary, and open-ended writing tasks) of urban, suburban, and rural schools. The blue and red bars represent the percent of students meeting and exceeding grade-level expectations two years prior to implementing Applied Grammar Online. The green bar represents the percent of students meeting and exceeding grade-level expectations with Applied Grammar Online. Two times a week for 15+ weeks students completed the Applied Grammar Online (*Sentence Building*) lessons and scored a 3 (proficient learner) or 4 (distinguished learner).

This data set includes an urban ES, urban-suburban MS, and rural HS where *Writing to Win* Applied Grammar Online boosted students' overall ELA scores significantly.

- The elementary school with 90% of its students below grade level for two years prior to Applied Grammar Online, saw 2 1/2 times as many students meet standards, a number within 11% of the state three-year average.
- Middle school students in grade 6 posted scores 18 and 13% below the 3-year state average of 41%. With Applied Grammar Online, the gap closed to within 4% of the state average.
- Grade 8 students in a middle-high school met the state average after years of scoring 12-14% below.
- Similar gains occurred among grade 9 students. The group practicing Applied Grammar Online posted a 17% increase in ELA scores over the previous year, 5% above the state 3-year average.

In all four schools, students and teachers now believe they are capable of exceeding the state average.

Figure 6  
Applied Grammar Online boosts scores on ELA tests that include extended writing



## Research design – Classroom action research

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 several sound 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 before them and the mean score of students statewide over the last three 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 Grammar Online as their vehicle for achieving that shared vision.

*Our purpose is to employ principles of mental chunking to imprint increasingly mature grammatical patterns in the minds of students. As students demonstrate automaticity as they practice combining new grammatical patterns, the patterns start appearing in their independent writing as needed. These proven practices have resolved the problem of teaching language skills with no observable impact on students' independent writing.*

Question – What is the effect of Applied Grammar Online on student learning as measured by end-of-year / course state tests? For the answer see Figure 6.

## Review of the Literature

We chose the study of sentence-combining practice online for two reasons: 1) 50+ years of research established a significant positive impact of sentence-combining practice on tests of written expression and reading comprehension and 2) the strategy has yet to be studied in a digital format.

*Writing Next: Effective Strategies to Improve the Writing of Students.* A Report to the Carnegie Corporation of New York  
Graham, Steven; Perin, Dolores

Graham and Perin's meta-analysis of research of writing instruction identified sentence combining as one of the eleven most effective instructional practices for improving the writing of students in grades 4-12.

"Using Sentence Combining Instruction to Enhance the Writing Skills of Children with Learning Disabilities"

Saddler, Bruce; Ellis-Robinson, Tammy; Asaro-Saddler, Kristie; University at Albany

This research team established the effect of systematic sentence-combining practice on K-8 students in a variety of subgroups.

Sentence-combining research to date has used pencil and paper exercises with recent emphasis on the use of PALS (Peer-Assisted Learning System). Applied Grammar Online includes several ingredients new to sentence-combining practice. Online oral-kinesthetic mini-lessons introduce each grammatical pattern practiced. The digital format provides precision keyboarding practice, immediate positive feedback on every puzzle, and reports for teachers to share with students, parents, and administrators.



## Methodology

**We chose an experimental-control group design** that included the study of Applied Grammar Online across 10 levels of sentence-combining practice. The design required the study to fit within the school scheduling to make the data generated as reliable as possible and instructive to the teachers and students involved.

**High school students** in control groups received 143 hours of instruction with the district adopted textbook series guided by their district curriculum guide. Experimental-group students received the same instruction except for 15 hours (12% of the total hours) of study with Applied Grammar Online of two 20-minute lessons a week.

**Middle and elementary school students** in control groups received 235-255 hours of instruction with the district adopted ELA textbooks led by their district curriculum guide. Experimental group students received the same instruction except for an average of 22 hours (8-9% of the total hours) of study with Applied Grammar Online.

**Equivalent groups of students** – For each study we identified control and experiment groups. All student groups were similar in performance 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 year there were between 17-19% advanced, 55-57% average, and 24-26% basic students.

**State tests for ELA (including extended writing) were 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 grades exceeded the expectations of their shared visions. All three envisioned scores exceeding the state mean score but not by the double-digit gains posted (See Figure 6).

In all three schools, growth in student achievement on the state writing subtest of the ELA assessment exceeded that of their overall ELA score. This was most notable in grade 9 where the 38% increase in scores of extended writing lifted their increased ELA score of +14% an additional 5%.



## Applied Vocabulary Online

For over two decades, Applied Vocabulary Online 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.

Figure 7 presents student achievement on end-of-year state tests of math, social studies, and biology in rural, urban, and suburban schools. 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 Online. The green bar represents the percent of students meeting and exceeding grade-level expectations with Applied Vocabulary Online. Three times a week, students used critical-thinking strategies to write their explanations of course content in math, social studies, and biology.

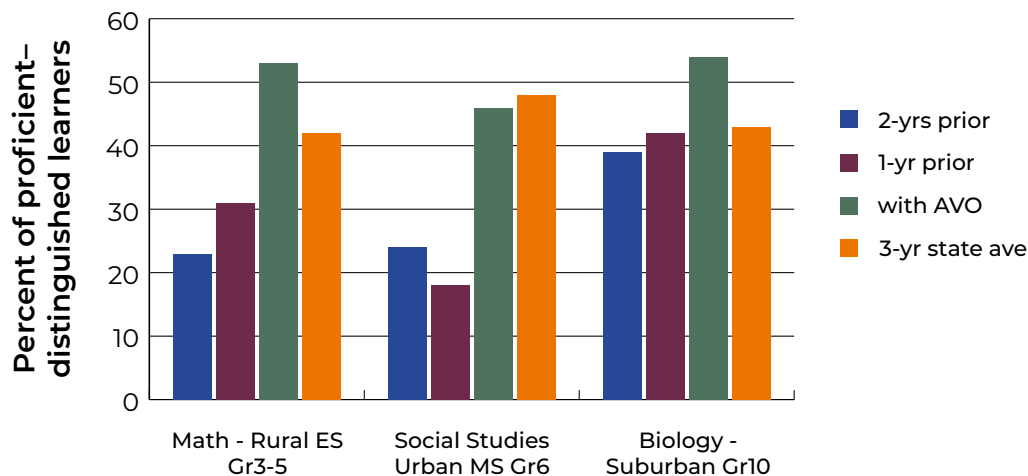
This data set includes a rural ES, urban MS, and suburban HS. All three schools posted double-digit gains the first year of implementation.

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

Figure 7  
Applied Vocabulary Online Boosts ELA, math, Pathways, science, and social studies scores

### Impact data – Applied Vocabulary Online

4-8 sentence entries 3 times/ week for 12-15 weeks





## Research design – Classroom action research

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 Online 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 Online on student learning as measured by an end-of-year / course state tests? For the answer see Figure 7.**

## Review of the Literature

We chose the study of Applied Vocabulary Online 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.



## 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.

**State tests for ELA, math, science, or social studies were 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 schools envisioned their scores exceeding the state mean score in the single digits and not by the double-digit gains posted (See Figure 7).

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) state tests exceeded the control groups by 6% to 22%. The lower the students' score before our study, the greater the increase. In 6th grade social studies before systematic Applied Vocabulary Online, 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 3rd grade math pushed student 10% ahead of the state average. A gain of 11% moved average-performing 10th grade biology students 10% ahead of the state average.



## Applied Reading and Writing

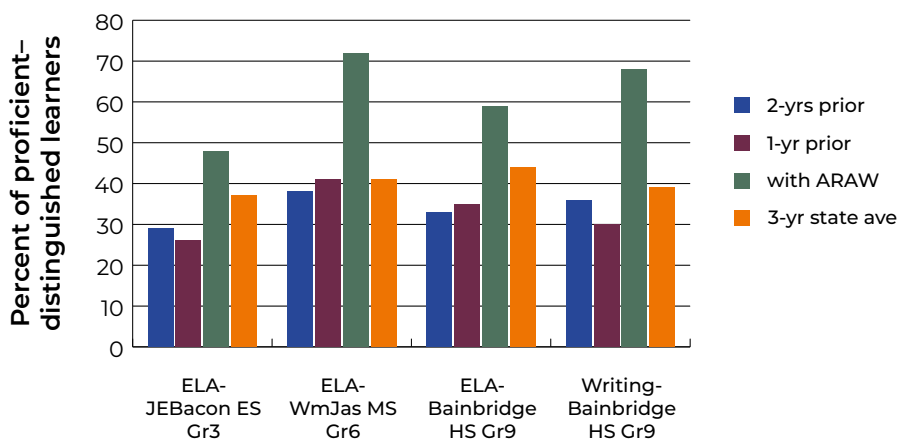
*Writing to Win* Applied Reading and Writing have become the proven link between the study of paired texts and double-digit growth on state ELA and Writing tests.

The graph on this page (See Figure 8) presents recent achievement scores on state ELA assessments (reading comprehension, vocabulary, and open-ended writing tasks). The green bar presents the percent of students who completed 2-3 Applied Reading and Writing and scored a 3 (proficient writing) or 4 (distinguished writer) on their state test of ELA and extended writing.

Data are from JE Bacon ES, William James MS, and Bainbridge HS. The Applied Reading and Writing (green bar) moved student achievement above the state average for the first time in recent years for all three schools. Note also how the 38% increase in number of proficient and distinguished writers impacted the double-digit rise of ELA scores for their grade 9 students.

**Figure 8**  
Applied Reading and Writing Boost ELA and Writing Scores

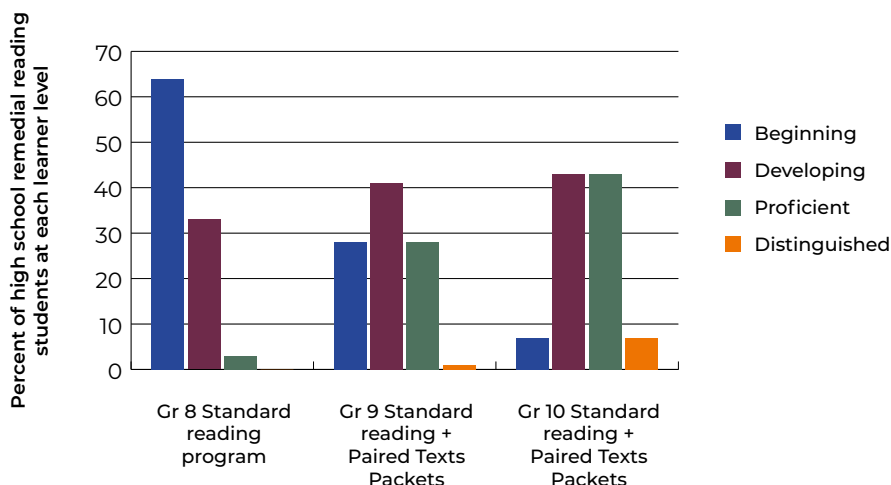
Check out the impact of Applied Reading and Writing at 3 schools.



### A case study of 41 remedial students at Wayne County School.

Students in the two grade 9 remedial classes posted a 28% rise in the percent of proficient and distinguished learners on a state end-of-course test. They also posted a 35% drop in students performing as beginning ELA learners. Additionally, in grade 10, 49% of the same students performed as proficient and distinguished learners, a 19% rise on end-of-course scores. Notably, the percent of students performing as beginning ELA learners dropped another 21% to 7%.

**Figure 9**  
Applied Reading and Writing Accelerates Remedial Reading Scores



## Research design – Classroom action research

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** delivers a positive effect for a number of reasons. The most important is that **action research** is always directly 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 three 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 Reading and Writing 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 integrating reading and writing instruction by emphasizing strong proven practices for students in writing as much as reading.*

**Question – What is the effect of Applied Reading and Writing on student learning as measured by an end-of-year / course on state ELA tests? See Figures 8-10 for the answer.**

## Review of the Literature

We chose the study of pair texts because of the focus on concepts instead of the content of a single text or several unrelated texts.

### **Conceptual Coherence, Comprehension, and Vocabulary Acquisition: A Knowledge Effect? Cervetti, Gina N.; Wright, Tanya S.; Hwang, HyeJin**

*Reading and Writing: An Interdisciplinary Journal, v29 n4 p761-779 Apr 2016*

**Research has shown** the use of conceptually coherent text sets to be effective in building knowledge and vocabulary, as well as preparing students for new texts on the same topic. Both broad knowledge and topic-specific knowledge are essential for reading comprehension. In turn, background knowledge allows readers to make inferences, which **aids in comprehension, thinking, and memory**. Studies have also shown that prior knowledge of a topic **has a greater impact** on reading comprehension than generalized reading ability. As educators, we must recognize the power of prior knowledge!

*Newsela, Readworks, Achieve the Core, Teacher-made products, and Teachers Pay Teachers* are the best known online text-set resources for educators. They present solid choices of related texts and, for the most part, adequate selected-response items, constructed-response prompts for individual texts, and some extended-response prompts for the paired texts.

What are missing and essential ingredients, however, are

1. an impactful pacing guide of strategies for their use,
2. differentiated levels of reading comprehension activities, and
3. support for the steps of the writing process in nurturing effective written responses.



## Methodology

We chose an experimental-control group design that fit within school scheduling to make the data generated as reliable as possible and instructive to the teachers and students involved.

High school students in control groups received 127 hours of instruction with the district-adopted textbook series guided by their district curriculum guide. Experimental-group students received the same instruction except for 9 hours (7% of the total hours) of study with the Applied Reading and Writing embedded in two 3-week cycles.

Middle and elementary school students in control groups received 235-255 hours of instruction with the district adopted textbook series guided by their district curriculum guide. Experimental group students received the same instruction except for an average of 22 hours (8-9% of the total hours) of study with the Applied Reading and Writing embedded in a 3-week cycle during each 9-weeks.

**Equivalent groups of students** – For each study we setup control and experiment groups. All student groups were similar in prior student achievement. For example, we compared the experimental group of students (winter-spring, 2019) with control groups of students in winter-spring 2017 and 2018. In each year there were between 17-19% advanced, 55-57% average, and 24-26% basic students.

**State ELA assessment** 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 grades exceeded the expectations of their shared visions. All three envisioned their scores exceeding the state mean score by single digits but not the double-digit gains posted.

In all three schools, growth in student achievement on the writing subtest of the state ELA assessment exceeded that of their overall ELA score. This was especially significant in grade 9 where the 38% increase in scores of extended writing lifted the increase in overall ELA score up to 24%.

**A targeted case study** – In advance planning with new schools, we ask if there are special subgroups of students in need of targeted study. In one high school, the essential requirement for adopting Applied Reading and Writing was its demonstrated significant impact on remedial reading students over a 3-year period of instruction. Two years prior to our appearance, 36 grade 7 students qualified for continued instruction in remedial reading in grade 8. They followed a traditional reading curriculum with emphasis on reading followed by writing reflection. District leaders saw that while grade 8 scores improved significantly, only one student of 40 met the state expectation of proficient readers and writers. School leaders felt this improvement was insufficient and adopted *Writing to Win* Applied Reading and Writing for the students in grade 9 who completed one packets / nine week. The data (Figure 10) show the significant positive impact of the traditional reading instruction in grade 8 and significant increased growth with the embedded Applied Reading and Writing in grades 9 and 10.

Figure 10  
Impact of Applied Reading and Writing on Remedial Reading Scores

	1 Beginning writing	2 Developing writing	3 Proficient writing	4 Distinguished writing	Mean score
Gr7 – 2 years prior	36	3	0	0	1.08
Gr8 – 1 year prior	26	12	1	0	1.38
Gr9 – year 1 Applied Reading and Writing	12	15	11	1	2.05
Gr10 – year 2 Applied Reading and Writing	4	16	16	4	2.50

In the future, remedial readers posting ELA scores of 3-4 in grade 9 will move to the regular ELA course in Gr10. The essential value of classroom action research is underscored again. The quick turn-around in reliable research data allowed instructional changes for the benefit of students.



# Appendix

## Three Previews of the Shift

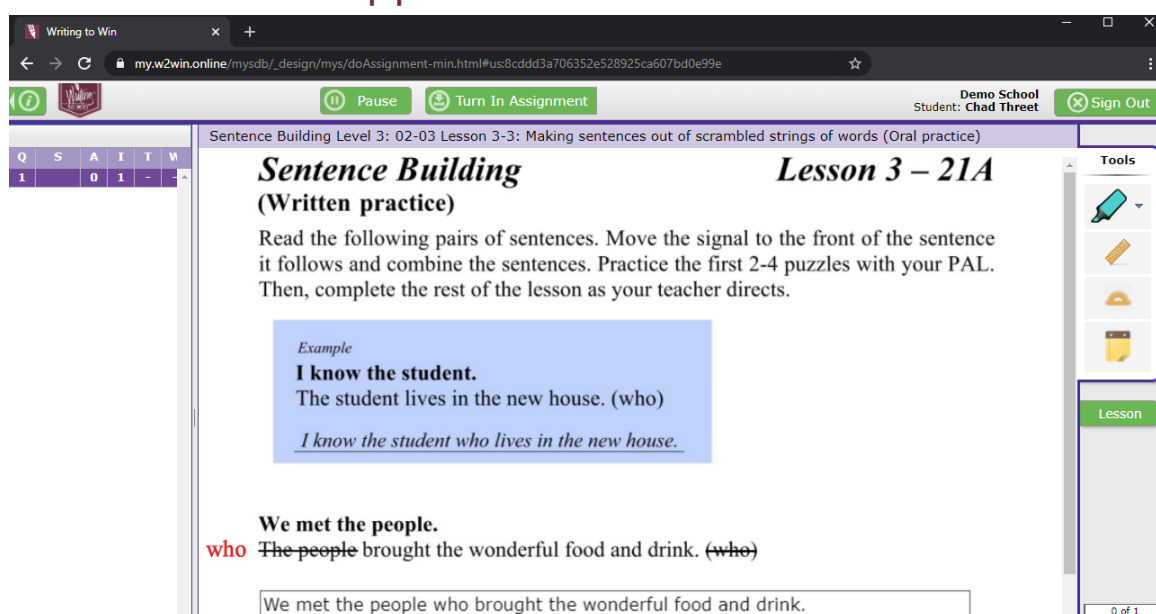
In all three *Writing to Win* routines, teachers admit that the full integration of reading-writing is simpler than their current approach. Students say each routine is easy and even fun. The difficulty comes for teachers in moving out of their comfort zone to make the change.

In **Applied Grammar Online**, the computer presents two or more simple sentences (Figure 11). Students

- **read** them carefully and note how they are related. The signals that students are taught prompt them to move words around in one or more of the sentences so they can combine them. In this example students move the signal (*who*) in front of the sentence it follows. When they do, they immediately see how to combine the two sentences.
- **write** the combined sentence in the field provided.

Students have three tries to copy-type the words, spacing, and punctuation in the new order for a warm-fuzzy response from the computer.

Figure 11  
A Screenshot of Applied Grammar Online

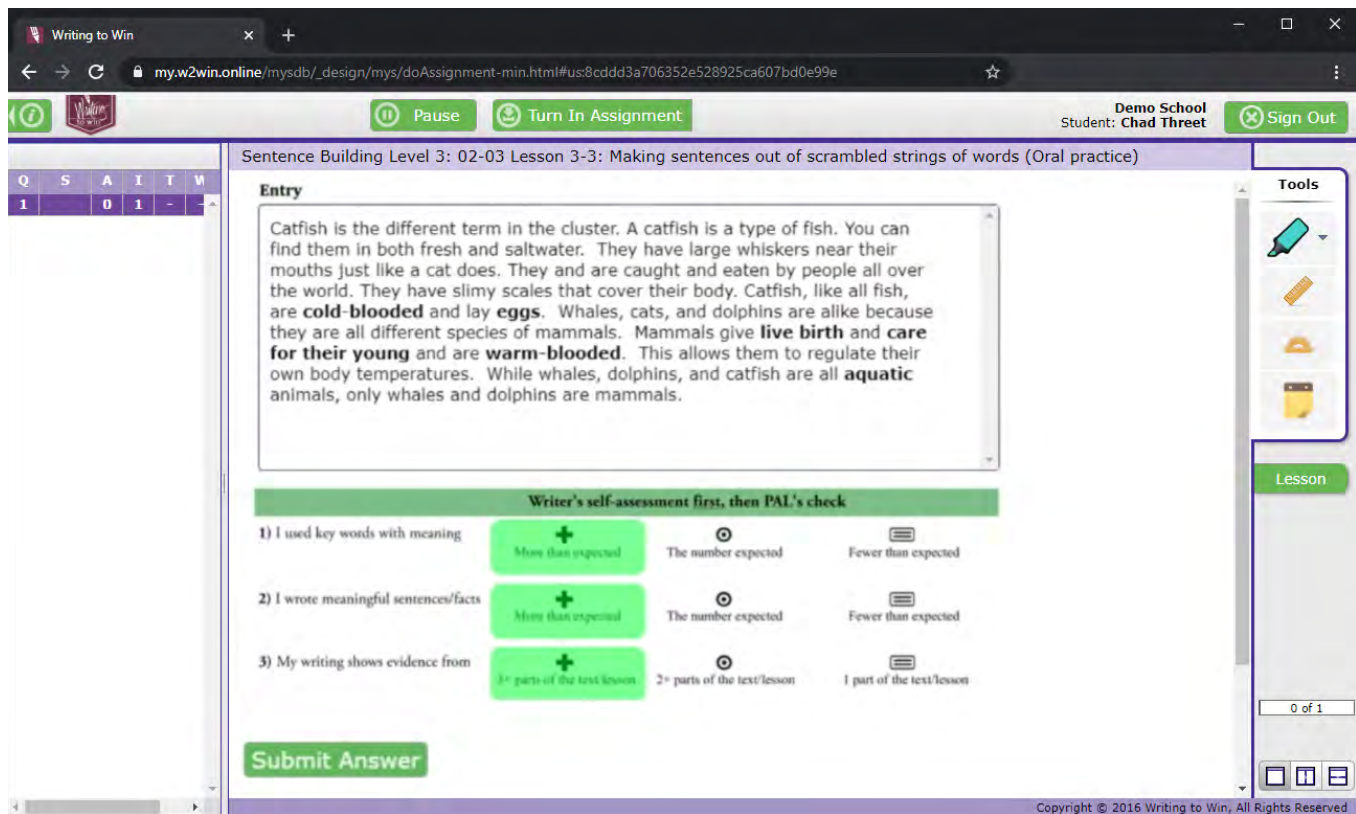


In **Applied Vocabulary Online**, the computer helps teachers prompt students to respond to a current lesson or reading texts in a short, designated time. Teachers choose one of 12 critical-thinking strategies and provide 6-10 key terms for students to use in responding to the substance of a lesson / text. As students use the expected number of key terms, their writing shows that they recall more than they thought. They read and write in the same mental act.

Once they complete their writing, a self-assessment rubric appears beneath their writing and helps them review their entries and declare how well they met the expectations of their teacher (See Figure 12).



Figure 12  
A Screenshot of Applied Vocabulary Online



**Writer's self-assessment first, then PAL's check**

1) I used key words with meaning	<input checked="" type="radio"/> More than expected	<input type="radio"/> The number expected	<input type="radio"/> Fewer than expected
2) I wrote meaningful sentences/facts	<input checked="" type="radio"/> More than expected	<input type="radio"/> The number expected	<input type="radio"/> Fewer than expected
3) My writing shows evidence from	<input checked="" type="radio"/> 3+ parts of the text/lesson	<input type="radio"/> 2+ parts of the text/lesson	<input type="radio"/> 1 part of the text/lesson

In each session of Applied Reading and Writing, the provided strategies prompt students to listen, read, speak, and write with a PAL, small group, or the whole group. Figure 13 shows how designated PALs read the prompt, the rubric, and the key terms provided. They plan a relevant response together and then write their responses individually. Note the teacher model responses in red. They show examples for well-phrased responses that meet (2 points), approach (1 point), and miss (0 points) teacher expectations.



## Figure 13 A Screenshot of Applied Reading and Writing

### Written assessment

### Constructed Response – "The Harlem Renaissance and the Jazz Age"

Based on your reading of Text #1 "The Harlem Renaissance and the Jazz Age," construct your response to this writing prompt.

#### The Writing Prompt

The 1920s were a unique period of cultural expression that had long-lasting effects. What contributed to the rise of the Harlem Renaissance? Use evidence (details, key terms, and ideas) from the text to support your answer.

#### The 2-point Rubric

Pts	The response achieves the following ...
2	Gives sufficient evidence of how to analyze the central idea of an informational text <ul style="list-style-type: none"> <li>• Adequately explains the central idea with clear relevant evidence from the text</li> <li>• Explains how it fits into the overall structure and contributes to the text</li> <li>• Includes specific examples/details that make clear reference to the text.</li> </ul>
1	Gives limited evidence of how to analyze the central idea of an informational text <ul style="list-style-type: none"> <li>• Attempts a vague explanation of the central idea with little evidence from the text</li> <li>• Explains how it fits into the overall structure and contributes to the text</li> <li>• Includes vague examples/details that make clear reference to the text.</li> </ul>
0	Gives no evidence of analyzing the central idea of an informational text, no explanation of <ul style="list-style-type: none"> <li>• Its central idea</li> <li>• How either fits into the overall structure and contributes to the text</li> <li>• Specific examples/details that make clear reference to the text.</li> </ul>

#### Sample of Constructed Responses

	<b>Teacher expectations: Write 4-5 sentences and use 2-3 key terms from the Word Study in your response.</b> <i>The Harlem Renaissance began when African-American writers, artists, and musicians moved north to New York City in the Great Migration. New York gave their creations a worldwide audience. In the first paragraph, the author notes that they were moving away "from the prejudice of the south." They were free to "express themselves in novel artistic ways." Eager audiences wanted to hear exciting <b>syncopated</b> jazz or poetry. Still it took Langston Hughes to help them see that they could "express their 'individual, dark-skinned selves.'" He told them that being true to their expressions of experience would not <b>impede</b> their efforts in the fight to be treated as equals. Hughes saw the end of World War I and the Great Migration as the perfect time for African Americans to be <b>innovative</b> and develop their true artistic genius.</i>
2 points	
1 point	<i>The Harlem Renaissance started after World War I. It happened in New York. African Americans began expressing themselves through art like they never had before. Langston Hughes was a great writer, and Duke Ellington and Louis Armstrong were great jazz musicians. They captured America's interest!</i>
0 points	<i>The 1920s were a unique period of cultural expression, but I'm not sure how much the Harlem Renaissance added to it. After all, Duke Ellington and Louis Armstrong were great musicians, but there were many great African-American musicians before.</i>

