Introduction

Writing skills are a critical component of academic and post-academic success. Communicating effectively in writing is more important than ever before. It comes as no surprise, therefore, that educators are searching for effective ways to improve student writing skills. There are several educational products available that promise to improve student writing. Surprisingly, few if any of these products are supported by scientifically-based research.

Vantage Learning strongly believes that sound educational decisions should be based on scientifically-based educational research where available. With the implementation of the No Child Left Behind Act (NCLB), this is more critical then ever before. Not only is research-based decision making important, it is now a federal requirement for adopting educational solutions.

This paper reviews the key requirements for evaluating “scientifically-based research” and presents several important studies of MY Access!™ demonstrating that MY Access! improves student writing and other areas of student academic performance. These studies are excerpted from a competitively selected paper that was presented at the annual conference of the National Council on Measurement in Education in 2004.

What is scientifically based research?

It is widely accepted by educational researchers that scientifically-based research should be relevant, clear and rigorous, based on valid and reliable measurement, and be able to withstand professional scrutiny. While there are some professional differences of opinion on the specific criteria, following are five important characteristics that most researchers would agree are critical.

• Relevant. First and foremost, high-quality educational research should address meaningful issues that bear directly on the topic of interest. If your goal is to find out what instructional programs improve academic performance, you need to make sure that the research addresses this. Other research that examines topics such as how much “students like the program” or “how often the program is used” may be interesting, but are likely to be of only tangential value in helping you select a program that has been proven to increase academic performance. In short, decision-makers need to ensure they are relying on research that is directly relevant to the decision at hand.

• Clear. The research should clearly articulate the purpose, goals and central questions covered by the research. The methods used, how the
data was analyzed and the findings should be clear (at least to a trained researcher in the content area).

- **Rigorous.** The research should employ systematic and objective methods. While “rigorous” is a relative term, the key characteristic of rigor is control. The organization, measurement and treatment (instruction) should be controlled in such a way so the reader can be confident that the findings really are the result of the treatment (instruction) delivered. An important aspect of rigor is whether the research is replicable; i.e. that there is enough control, detail and clarity in the research so it can be repeated in exactly the same way it was done originally with the same results.

- **Valid and Reliable Measurement.** Typically, student skill levels will be measured to see where they stand, often before and after the treatment (instruction) has been provided. Researchers need to be confident that the measures or tests used in the research actually measures what it is purposed to measure. This is associated with validity. Making sure that the measurement used will yield the same results no matter when it is administered or no matter what form of the test is used is the central issue with reliability. In short, if a researcher claims “writing scores improved”, he or she needs to be confident in that conclusion, that the study really measured writing and that the results are really due to the treatment (instruction) and not the result of an unreliable measure.

- **Withstands Scrutiny.** Perhaps the most important question to ask about the research is, “Has this research stood up to professional scrutiny?” In other words, has a credible third party reviewed and approved the research? The best way to judge this is to understand who has been involved in the review of the research. Generally speaking, this means that the research has appeared in a peer-reviewed journal, has been reviewed a panel of independent experts such as a competitively selected paper at professional conference or has been examined by a third party or third party panel of experts.

### Types of Research Designs

Research design refers primarily to the way in which a research study is set up or organized. When a researcher sets up a study, he or she wants to be able to clearly identify whether or not the treatment (the program or instruction delivered) has had an effect on students and to be sure that any effects that are found are truly due to the treatment and not some other extraneous factors.

Earlier we discussed some important criteria that should be in place to ensure that the conclusions from the research are accurate. The research design is the final piece of the puzzle in making sure that the research conclusions are legitimate. Like most aspects of research, research design considerations are not always that clear cut – there are always trade-offs. Not all designs are possible in all situations; the important point is that the strengths and weaknesses of the design should be understood so that the results can be properly understood.

There are many types of research designs but for convenience we can divide them into three categories: Experimental Designs, Quasi-Experimental Designs and Single Group Designs.
Experimental Design. The holy grail of research designs is the Experimental Design. Two or more groups are set up and comparisons are made across groups. The groups often include one or more treatments and a control group that receives no treatment. The individuals are split up into the two (or more) groups by randomly assigning individuals to each group.

Typically, each group is measured at the beginning of the study (pre-test) and is measured again at the end of the study (post test). While there are sophisticated methods for making these comparisons, they all rely on looking at how much scores went up or down and at the comparison of score changes among groups.

To carry out an Experimental Design to determine if student writing skills improved when providing the students with one-on-one instruction, a large group of students would be randomly assigned to one of two groups: “no instruction” (the control group) and “instruction” (the treatment group). The writing skills of each group member would be measured both at the beginning of the study and again at the end of the study period. The amount of improvement in writing skills between the control group and the treatment group could be compared. If the treatment group showed more improvement than the control group, it might be concluded that the treatment (in this case, one-on-one instruction) worked.

Quasi-Experimental Design. This is similar to the Experimental Design but differs in one important way: the individuals are not randomly assigned to groups. Typically, two similar, existing groups (for example, classrooms) are used; one is selected to receive the treatment and one is selected to serve as the control group and does not receive the treatment.

Quasi-Experimental Designs are used because it is often more practical to use existing groups and the luxury of random assignment is not available. It provides a good substitute for Experimental Design, but there may be less confidence that the effects observed are actually due to the treatment provided.

Single Group Design. Sometimes it is not possible to obtain two groups for comparison or it may not be legitimate to deny some students the treatment. In these cases, a single group design may be used. The group is measured at the beginning of the study (pre-test) and is measured again at the end of the study (post test) and the skill levels at the beginning of the study are compared to the skill levels at the end of the study.

While this provides some insight into the educational treatment being examined, you cannot be sure the results are actually due to the treatment because there is no other group to which you can compare the results.

MY Access! Research Studies

Here are four studies of MY Access! demonstrating that using MY Access! significantly improves student academic achievement. These studies are excerpted from the competitively selected paper, “A Summary of Studies Demonstrating the Educational Impact of the MY Access! Online Writing Instruction Application” presented by Dr. Scott Elliot and Cathy Mikulas from Vantage Learning at the annual conference of the National Council on Measurement in Education in San Diego in April of 2004.
Study 1: A Preliminary Study of MY Access! Impact on Writing Performance: Whittier Union High School District, California

Overview. Whittier Union High School District is an urban/suburban district east of Los Angeles, with five high schools and a mixed population of approximately 12,600 students, nearly 50% of which are economically disadvantaged. On a scale of 200-1000, the district’s Academic Performance Index (API) scores in the baseline year of 1999 ranged from a high of 601 to a low of 480, all well below the targeted interim performance of 800. Whittier administrators and educators recognized that they needed to increase their students’ achievement levels and chose to focus on teaching to essential standards and improving writing skills.

This study explored the efficacy of MY Access! as a tool to develop student writing skills. This study reports on one class’ MY Access! experience.

This study is based on 25 MY Access! student writing portfolios created during the summer of 2001 as part of a summer school writing development program for at risk students in an urban environment. Twenty five ELIL (English Language Intensive Learners), California Level 2 ELD students enrolled in the Summer School Program used MY Access! as a central component of their developmental writing program over the course of the summer.

Study Design. This preliminary study provides an initial view of the efficacy of MY Access! for use in improving student writing as part of developmental K-12 coursework. A single class of 25 students was selected to participate in the study.

Participants. Twenty-five grade nine students participated in the study. These students were part of a summer school program offered in an urban school district for at risk students. At risk students were those who performed poorly academically, exhibited poor writing and/or had poor standardized test results in the language arts area. These students were seen as at risk for continued poor academic success and potential failure on statewide writing assessments.

Design. The study was conducted from July 1, 2001 to August 18, 2001. All 25 students were provided with passwords and access to MY Access! and were informed that MY Access! would be used as a core component of the summer school program with the goal of improving their writing skills. Students were provided with specific writing assignments on an approximately weekly basis and were also encouraged to do additional writing at their own discretion. Approximately four writing prompts were assigned over the course of the study. Students typically wrote between two and five revisions of each of the assigned prompts.

Two content parallel measures of direct student writing (two separate writing prompts scored on the same rubric) were used. Student performance on their first response was compared to their performance on their last submission as a measure of writing improvement. Writing was measured on a 4-point scale using an established rubric that included: Organization, Development, Focus, Sentence Structure and Mechanics. Student performance was compared overall as well as on five dimensions of writing (see below).

Feedback/Scoring. Students were provided feedback on a 4-point scale
based on the MY Access! rubric. For each response submitted, students received an overall score, as well as a score in focus, organization, development, sentence structure and mechanics. Students also had access to sample high quality responses and additional instructional information through the MY Access! application.

Results. The average score initially obtained by students and the final score obtained as described above were compared as a measure of writing improvement.

Student Improvement. Twenty-one of the 25 students showed some improvement in their writing performance. Seventeen of the 21 students showing improvement showed growth in their overall score, while the remaining four showed growth in one or more aspects of their writing as reflected in the dimensional score.

Overall Score Results. The average overall score at the beginning of the program was 2.00. At the conclusion of the program, the overall average score was 2.84. Students showed an overall improvement in writing of nearly a point on the 4-point scale.

Focus Score Results. The average focus score at the beginning of the program was 1.96. At the conclusion of the program, the average focus score was 2.44. Students showed an improvement in focus of nearly one-half point on the 4-point scale.

Development Score Results. The average development score at the beginning of the program was 1.92. At the conclusion of the program, the average development score was 2.80. Students showed an improvement in development of nearly a point on the 4-point scale.

Organization Score Results. The average organization score at the beginning of the program was 1.92. At the conclusion of the program, the average organization score was 2.64. Students showed an improvement in organization of nearly a point on the 4-point scale.

Sentence Structure Score Results. The average sentence structure score at the beginning of the program was 1.92. At the conclusion of the program, the average sentence structure score was 2.48. Students showed an improvement in sentence structure of just over one-half point on the 4-point scale.

Mechanics Score Results. The average mechanics score at the beginning of the program was 1.96. At the conclusion of the program, the average mechanics score was 2.60. Students showed an improvement in mechanics of nearly two-thirds of a point on the 4-point scale.

Discussion. In a span of just over six weeks, students showed significant gains in writing performance. Students gained, on average, between one-half and one full point on the 4-point scale. Given the narrow range of the scale (1-4), this represents substantial growth. One point represents 25% improvement in performance. Perhaps more importantly, students moved from about the “2” point on the scale to the “3” point on the scale; in typical statewide student assessments, this often represents the difference between failing and passing.

At risk students in summer school programs such as this represent a significant instructional challenge. Minimal growth is generally seen in such programs. The magnitude of the growth seen in this preliminary study suggests that MY Access! is a valuable tool for writing development instruction.
Follow Up. Based on the success of the 2001 Pilot Program, Whittier expanded the use of MY Access! to all ninth- and tenth-graders throughout the district. Standards-based teaching coupled with MY Access! writing development instruction had sizeable impact on increasing the API scores for the district’s high schools.

Significant gains in writing performance were seen between 1999 and 2003 (see Tables 1 and 2). With the assistance of MY Access!, Whittier’s 2003 API scores increased to a range of 610 to 687 from former 1999 baseline levels of 480 to 601. The portion of the gain in API scores from 2002 to 2003 accounted for anywhere from 40% to 87% of the total gains since 1999. The two biggest improvements occurred in Pioneer High School (PHS) and Whittier High School (WHS), the two schools in the district with the highest minority and economically disadvantaged populations.

The Academic Performance Index (API) is the cornerstone of California’s Public Schools Accountability Act of 1999 (PSAA). The purpose of the API is to measure the academic performance and growth of schools. It is a numeric index (or scale) that ranges from a low of 200 to a high of 1000. A school’s score on the API is an indicator of a school’s performance level. The statewide API performance target for all schools is 800. A school’s growth is measured by how well it is moving toward or past that goal. A school’s base year API is subtracted from its growth API to determine how much the school improved in a year. The performance indicators contributing to the API include:

- Standardized Testing and Reporting (STAR) program
- California Standards Tests (CSTs) - English-language arts, mathematics, history-social science (science to be added later)
- California High School Exit Examination (CAHSEE)

While it can not be said with certainty that gains in performance were due to MY Access! use, it is clear that schools using MY Access! as part of a writing program do show significant gains in performance over time.

<table>
<thead>
<tr>
<th>High School</th>
<th>2003</th>
<th>2002</th>
<th>1999</th>
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<tbody>
<tr>
<td>CHS</td>
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<td></td>
<td></td>
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<tr>
<td>LSHS</td>
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<td></td>
<td></td>
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<tr>
<td>PHS</td>
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<tr>
<td>SFHS</td>
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<td></td>
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<tr>
<td>CHS</td>
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<td>WHS</td>
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<td>LSHS</td>
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<td>CHS</td>
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<td>LSHS</td>
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<td>PHS</td>
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<tr>
<td>WHS</td>
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</tbody>
</table>

Table 1
Table 2

California Academic Performance Index (API)
Gains, Whittier High School District

<table>
<thead>
<tr>
<th>School</th>
<th>Points Gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHS</td>
<td>20</td>
</tr>
<tr>
<td>LSHS</td>
<td>30</td>
</tr>
<tr>
<td>PHS</td>
<td>100</td>
</tr>
<tr>
<td>SFHS</td>
<td>15</td>
</tr>
<tr>
<td>WHS</td>
<td>50</td>
</tr>
</tbody>
</table>

Legend:
- Total API gain 1999-2003
- Portion of API gain, 1 year using MY Access!
**Study 2: Birmingham High School, Los Angeles Unified School District, California**

Birmingham High School is one of 51 schools in District C of the Los Angeles Unified School District in California. Although the state agreed to delay the requirement of passing the California State High School Exit Examinations (CAHSEE) until 2006, Birmingham administrators and educators knew they needed to take immediate action in order to raise their students’ achievement levels to acceptable levels.

**Description of the Population/Sample.** Approximately 75% of the students enrolled in Birmingham High School are economically disadvantaged, and 65% are also English Language Learners.

Approximately 812 tenth-grade English Language Learners (ELL) were selected to participate in a study of the impact of using the MY Access! writing application. Approximately half of the classes representing about 496 students used the MY Access! application while the remaining 306 students were in non-participating classes. Participants were determined on a voluntary basis (not random assignment).

**Procedures.** Those classes that elected to use MY Access! did so between approximately October of 2002 and April of 2003 (prior to the CAHSEE test administration). The remaining non-using classes were provided with the existing English Language Arts instruction during the same time period. Students used the MY Access! application between two and five times per week as part of their regular English Language Arts instructional time.

All students participating in the study took the required California High School Exit examination (CAHSEE) in April of 2003. The CAHSEE performance of those students using MY Access!™ was compared to those students who did not use MY Access!™.

**Results.** Eighty one percent of Birmingham students who used MY Access! (N passing = 405; Total N = 496) passed the California High School Exit Examination, while only 46% of the students who did not use MY Access! (N passing = 142; Total N = 306) passed the exam. A chi square test comparing the two passing rates was significant.
Discussion. MY Access! appeared to have a sizeable impact on the writing skills of the students using the program in their classrooms. The CAHSEE passing rates of individual classes using MY Access! ranged from a low of 60% (in a classroom with only 10 students) to 100% (in a classroom with 49 students). The majority of pass rates were in the mid-70s to mid-80s range. These results are illuminating, especially given the number of participating students.

With about 800 students studied, the effect does not appear idiosyncratic. All the same, this study did not rely on random assignment and it is possible that self selection to the participating/non-participating groups could account for the variance in performance of the two groups.
Study 3: Red Clay Consolidated School District, Delaware

The Red Clay Consolidated School District in New Castle County, Delaware consists of 28 schools in a predominantly suburban and rural setting. Red Clay Consolidated School District piloted the use of MY Access! in selected elementary and middle schools during the 2002-2003 school year.

After only one year of using MY Access! at selected schools, those schools showed significantly higher levels of writing proficiency as measured by the statewide writing assessment examination, the DSTP Writing Performance Levels.

Description of the Sample. Approximately 195 fifth-grade students were selected to participate in a study of the impact of using the MY Access! writing application. Approximately half of the classes, representing about 100 students, used the MY Access! application while the remaining 95 students were in non-participating classes. Participants were determined on a voluntary basis (not random assignment).

Procedures. Those classes that elected to use MY Access! did so between approximately October of 2002 and March of 2003. The DSTP was administered in March 2003 and was used as a criterion measure for comparing MY Access! users and non-users. Non-using classes were provided with the existing English Language Arts instruction during the same time period. Students used the MY Access! application between two and five times per week as part of their regular English Language Arts instruction.

All students participating in the study took the required DSTP writing examination in March of 2003. The number and percentage of students achieving the highest two levels on the DSTP within the group using MY Access! were compared to the number and percentage of those achieving those levels within the groups who did not use MY Access!. Students were also asked to indicate their frequency of use of MY Access! to allow further comparisons. Those using MY Access! two to three times per week were compared to those who used the application four or five times per week.

Results. Fifth-grade students who used MY Access! had sizeable academic gains on the March 2003 DSTP Writing Assessment. Eighty-six percent of fifth-grade students who used MY Access! two or three times a week scored at Performance Level (PL) 3 or 4 on the DSTP; 67% of fifth-grade students who used MY Access!™ a total of four or five times per week scored at PL 3 or 4. Only 43% of fifth-grade students who had no exposure to MY Access! scored at PL 3 or 4. Chi square comparisons showed that these relationships were significant.
Table 4

<table>
<thead>
<tr>
<th>5th Grade Students at Mote Elementary School, Red Clay Consolidated School District, Delaware</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Students Proficient on March 2003 DSTP</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>5th Graders with no MY Access! exposure</td>
</tr>
</tbody>
</table>

Discussion. MY Access! appeared to have a sizeable impact on the writing skills of the students using the program in their classrooms. The DSTP passing rates were significantly higher for those students who used MY Access!. It is interesting to note however, that those using the application two to three times per week seemed to perform better than those who made use of the application more often.

Again, while these results clearly point to strong effects for MY Access! use on later writing performance, the lack of random assignment suggests that caution should be used in interpreting the results; it is possible that self selection in to the participating/non-participating groups could account for the variance in performance of the two groups.
Study 4: Parkland High School, Allentown, PA

Parkland High School is located outside of Allentown, PA. After administering the Spring 2002 PSSA (required state) Writing Test, administrators and educators found an unacceptable 22% of all students scored Below Proficient. In response to this perceived problem, MY Access! was adopted as one way to address the challenge for the 2002-2003 11th grade class.

Study Design. In the fall of 2002, the approximately 709 11th grade students were recruited to participate in a pilot program and research study of MY Access!. Students used MY Access! between September 2002 and March 2003. Students took the PSSSA writing assessment in March 2003. The 2003 PSSA results (for MY Access! use) were compared to performance for that class on the 9th grade PSSA writing test in 2000 (with no MY Access! use).

Results. The MY Access! treatment had sizeable impact in reducing the number of students who were at risk of not meeting Proficient standards (see Table 5 below). Using MY Access!, 91% of 709 students tested on the PSSA in 2003 attained scores of Proficient and Advanced, compared to only 76% of 711 students tested in 2000 that did not use MY Access!. Using MY Access!, less than 10% of the class in 2003 is rated Below Proficient on their PSSA scores, compared to 25% of the class in 2000 that did not use MY Access!.

MY Access! had a sizeable impact on raising PSSA test scores from Basic to Proficient, or from Below Basic to either Basic or Proficient. Fifteen percent more students demonstrated Proficient and Advanced writing skills in 2003 than in 2000. In other words, 100 more students tested on the PSSA in 2003 after using MY Access! attained scores of Proficient and Advanced than in 2000 when MY Access! was not used.

Discussion. As with the other three studies cited, MY Access! appeared to have a sizeable impact on the writing skills of the students using MY Access!. PSSA proficiency rates were up significantly when compared to the year 2000 baseline.

While these results clearly point to strong effects for MY Access! use on later writing performance, the lack of control between the baseline year of 2000 and the year 2003 suggest that the effects could be attributable to other factors. Moreover, while the state makes strong efforts to achieve comparability in evaluation of essays from 9th to 11th grade, these results may not be directly comparable.
Table 5

PSSA Writing Scores Year 2000 v. Year 2003, Parkland High School

<table>
<thead>
<tr>
<th>Proficiency Level</th>
<th>Percentage of Students Attaining Proficiency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Basic</td>
<td>2000: 1%  2003: 2%</td>
</tr>
<tr>
<td>Basic</td>
<td>2000: 20% 2003: 30%</td>
</tr>
<tr>
<td>Proficient</td>
<td>2000: 60% 2003: 80%</td>
</tr>
<tr>
<td>Advanced</td>
<td>2000: 10% 2003: 5%</td>
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</table>
In addition to these studies investigating the effects of MY Access! use on writing performance, we are also interested in the student perceptions of using MY Access! in the classroom. The following describes one such study.

This particular study provides a view of students’ perceptions of using MY Access! based on a questionnaire completed during Spring 2003. Students used the MY Access! application for approximately six months between October 2002 and March 2003.

Participants. Ninety-four eighth grade students were asked to participate in the study. These students were enrolled in the Hilton School District in New York State.

Design. All 94 students were provided with passwords and access to MY Access! and were informed that MY Access! would be used as a core component of the writing program with the goal of improving their writing skills. Students were provided with specific writing assignments approximately on a weekly basis and were also encouraged to do additional writing at their own discretion. Students typically completed an initial draft of a response to each prompt and did between two and five revisions of each essay.

At the end of March, students were asked to complete a multi-question survey of their attitudes and opinions about MY Access!. The frequency and percentage of students selecting each response to each question were calculated (see below).

Overall Perceptions. Overall, students felt very positive about using MY Access!. Almost all (87%) of the students recommended that the English Language Arts teachers use the program again. More than four-fifths (81%) of the students indicated that MY Access! helped them prepare for the required state English examination.

Perceptions of Writing Improvement. More than four-fifths (81%) of the students felt that MY Access! helped them improve their writing. Similarly, more than four-fifths (82%) of the students indicated that they used the feedback provided to improve their writing.

Perceptions of Scoring Accuracy. More than four-fifths (83%) of the students thought that the MY Access! scoring was fair and accurate. Nearly three-quarters (73%) of the students found the scoring feedback to be good, very good or excellent and more than four-fifths of the students said they used the feedback to improve their writing scores.

Discussion. Clearly, students found the MY Access! program to be helpful. More than four-fifths of the students felt the program and the feedback it provided helped them improve their writing. Nearly all recommended continued use of the product and saw the product as helpful in preparing for the statewide high stakes examination. The scoring was generally seen as fair and accurate.

Students’ perception of curriculum materials is very important in the evaluation of any instructional strategy. While student perceptions alone are insufficient for evaluation, these results combined with previous studies demonstrating significant writing skill improvement suggest that MY Access! is a beneficial component of a school’s writing program.
Summary

The research presented indicates that students who use MY Access! tend to show greater improvement in writing and language arts skills than those students who do not use MY Access!. More specifically, when students use MY Access! several times a week they show dramatic gains in writing skills as measured by high stakes statewide examinations and other standardized writing measures. In addition, surveys of student perceptions of MY Access! have been overwhelmingly positive, as demonstrated by the example presented in this paper.

In summary, these studies demonstrate:

1. Students show significant gains in writing skills (as measured by parallel forms of the same instrument from pre- to post test) over time.
2. Students show significant gains on statewide high stakes examinations after approximately six months of using MY Access!.

All the same, these results need to be considered preliminary. There are several limitations that caution against drawing these conclusions too strongly. While there is no reason to assume a bias in assignment of students to MY Access! use or no MY Access! use treatment groups, students were not randomly assigned to conditions.

It is generally unknown what treatments non MY Access! users were provided. This however, is more likely to mitigate the effects seen here. These “non-using students” were not subject to no treatment; rather, they presumably received an alternative form of instruction during this period. In other words, they did not “just sit there” while others were using MY Access!.

Future research is being targeted at larger studies under more controlled conditions with random assignment. Also, research will be conducted on the effectiveness of MY Access! for writing instruction in areas outside the K-12 and higher education areas.