Charlotte-Mecklenburg Schools

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Interim Report

Small Schools

March 2010

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Small Schools Interim Report: Academic Achievement

March, 2010

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This interim report examines whether converting Garinger and Olympic high schools into autonomous small schools positively impacted student achievement during their initial years as small schools. Analyses were conducted at four distinct levels. First, quantitative analyses were used to compare small schools and traditional high schools within CMS during the 2008-2009 school year (Tier 1). Next, these small schools were compared to their former traditional schools prior to their school conversions (Tier 2). These first two levels were conducted to assess if school setting (i.e., small school versus traditional) impacts student achievement. Olympic and Garinger small schools were then compared to each other to see if there were any major differences (Tier 3). Finally, individual small schools at Garinger and Olympic were compared to one another to assess if some small schools were more successful than others at each small school site (Tier 4).

Method

Sampling. The participants included in these analyses were students attending the five Olympic small schools and the five small schools at Garinger. Finding closely matched comparison high schools was challenging. However, comparison schools for Tier 1 analyses were identified based on the results of a hierarchical cluster analysis designed to 'cluster' similar high schools based on previous academic achievement *(i.e., 2007-2008 standardized EOC scale scores and EOC achievement levels*), current absence and suspension information *(i.e., 2008-2009 average Out of School Suspension (OSS) days, In-School Suspension (ISS) days, unexcused absences, and excused absences*), as well as the current demographic composition of the student body *(i.e., 2008-2009 school size, gender, race/ethnicity, percent of economically disadvantaged (ED) students, Limited English Proficiency (LEP), and Exceptional Child (EC)* status). Those schools with the smallest Euclidian distance coefficients were selected to serve as matched comparison traditional high schools for tier 1 analyses, since they were the best comparison high schools available. Propensity matching was then used at the student level to create comparison groups for Olympic and Garinger small school students for Tier 1 analyses. Comparison students were selected from the matched comparison schools and comparison groups were created for each school and each of the 5 gateway EOCs. Comparison students were matched to small school students based on ethnicity, gender, LEP status, ED status, EC status, AP/IB enrollment, 8th grade Reading and/or Math EOG scores, and unexcused absences. Student samples for Tier 2 included students at each school's former comprehensive high school from 2002-2005 and students at the small schools from 2006-2009. Tier 3 and 4 analyses utilized students at the small schools from 2006-2009.

Student outcome data. Standardized EOC scale scores, EOC achievement levels, and 2008-2009 NCDPI growth scores were obtained from the district data warehouse. To examine the level of academic equity, subgroup indicators such as gender, race/ethnicity, ED, LEP, and EC status were utilized to disaggregate academic achievement data appropriately.

Analyses and report presentation. Appropriate analysis of variance tests were utilized to compare differences between standardized scale scores. As proposed, analyses were conducted to determine if any differences were found at each of the four levels in question. For Tier 1 analyses, growth outcomes were also examined using the NCDPI student growth calculations. For each tier, demographic information is presented for the groups being compared followed by descriptive comparisons of EOC proficiency. Lastly, we provide the statistical comparisons utilizing standardized EOC scores and/or NCDPI student growth calculations and employing various statistical control variables.

Major Findings

Conflicting findings were found between differing levels of analyses. For the first two tiers, the (+) symbol denotes positive findings for small schools, while the (-) symbol denotes negative findings for small schools.

Tier 1 results.

- Olympic small school (vs. matched comparison students).
  - +Significantly higher U.S. History growth scores.
  - +Marginally better in Biology and U.S. History.
  - +Slightly higher Biology and Civics & Economics growth scores.
  - -Marginally worse in Algebra I and English I.
  - -Slightly lower Algebra I and English I growth scores.
  - No differences on Civics & Economics scores.
- Garinger small school (vs. matched comparison students).
  - +Marginally better in Biology.
  - +Slightly higher Biology and U.S. History growth scores.
  - -Marginally worse in Algebra I and Civics & Economics.
  - -Slightly lower Algebra I and Civics & Economics growth scores.
  - No differences on English I or English I growth scores.

Tier 2 results.

- +Overall, students at Garinger and Olympic small schools performed the same or better on end of course exams than students did when each school was a traditional high school, when comparing the small schools (2006-2009) to their former traditional schools (2002-2005).
- Year level analyses showed that there were significant differences in EOC performance by year.
  - +-Olympic small school students in 2006-2007 generally performed worse than or on par with traditional school students from previous years and performed better in 2008-2009 than traditional school students from previous years.
  - +-Garinger small school students in 2006-2007 generally outperformed Garinger traditional school students from previous years. Garinger small school students in

2007-2008 experienced a drop in performance, but then improved again in 2008-2009 to again outperform traditional school students.

Tier 3 results.

- When comparing adjusted EOC scores at Olympic and Garinger small schools, it was clear that the strongest predictor of performance was year; students at both small schools performed best in 2008-2009.
- Differences by year:
  - After controlling for demographic differences between schools, students at Garinger small schools outperformed Olympic small school students overall on Algebra I.
    - Garinger small school students performed far better than Olympic small school students in 2006-2007.
    - Olympic small school students performed marginally better than Garinger small school students in 2007-2008 and 2008-2009.
  - Olympic students outperformed Garinger students overall in Civics & Economics and U.S. History.
  - No significant difference between Olympic and Garinger small schools in overall English I performance.
    - Garinger small school students outperformed Olympic small school students in 2006-2007, then dropped below Olympic small school students in 2007-2008 and again outperformed them in 2008-2009.
  - No significant difference between Olympic and Garinger small schools in overall Biology performance.

Tier 4 results.

- Students across Olympic and Garinger small schools performed best in 2008-2009.
- There were variations between small schools at each small school site.
  - Year by school analyses found that some small schools at Olympic showed notable performance across EOCs by year.
    - Students at International Studies showed the most improvement from 2006-2009.
    - Renaissance and METS also made noteworthy improvement in EOC performance in 2008-2009.
  - Year by school analyses found that some small schools at Garinger showed notable performance across EOCs by year.[1]
    - Students at International Studies showed the steepest increase in EOC performance in 2008-2009.[2]

[1]For Garinger small schools, we only analyzed data from 2007-2008 and 2008-2009, when all five small schools were in existence.
[2]The U.S. History end of course exam was only administered at Garinger small schools in 2008-2009.

- New Technology also continued to remain among the top performing small schools at Garinger, with additional increases in EOC performance in 2008-2009.

Discussion

In sum, students at small schools perform either the same or slightly better on the five Gateway EOCs than students did when these schools were traditional high schools. However, small school students do not perform appreciably better than matched comparison students from similar schools. Nor does one group of small schools (Garinger or Olympic) definitively outperform the other. The greatest amount of variation in academic performance is within the small school sites themselves. This seems to imply that other forces are at work to impact academic achievement within each small school. It may be that more successful small schools utilized innovative programming or scheduling practices to boost academic achievement. Or perhaps more successful small schools have been able to hire and retain successful teachers and leaders. It may be that the small school format helps to facilitate innovative practices, but given the wide variance in academic achievement within each group of small schools it appears that the small school format itself does not greatly improve academic achievement.

Future Interim Reports

It is important to examine a variety of factors when considering school performance. Only by coupling student achievement data with more qualitative data (i.e., district surveys, administrator, teacher & student interviews) related to small schools, can a comprehensive evaluation of small school success be conducted. It may take time for new schools to become stable enough to implement their vision and to begin to have an impact on student outcomes (The Chicago Small Schools Research Team, 2000). Interim report 2 is projected to be completed by the end of Spring 2010. This will include survey results by these same levels of analyses. Additionally, preliminary results of qualitative components will also be presented. EOC scores from 2009-2010 will be presented in the final report anticipated to be completed in early Fall 2010.

INTRODUCTION

Within the past decade, there has been a highly visible push to reshape America's high schools. One aspect of this reshaping effort is the small school initiative. Underlying this initiative is a theory of change based on a premise that large, traditional high schools do not serve all students well, especially low-income, minority students. Research has shown that small schools, particularly schools with less than 600 students, are safer, have better attendance rates, fewer behavioral problems, higher faculty morale, and more family satisfaction than larger, traditional schools (Clearly & English, 2005). Literature regarding the direct impact small schools have on academic performance is in short supply, as most initiatives are still in the infant stages of implementation. As these small school environments move forward, they provide fruitful ground for investigating the effects on students' academic experiences.

The small schools initiative within the CMS district was enacted during the 2006-07 school year at Olympic and Garinger high schools but was preceded by grant-submitting and planning activities during the previous years. Olympic high school received a grant to convert to five, autonomous smaller schools from the Coalition of Essential Schools (CES), which is funded by the Bill and Melinda Gates Foundation. Olympic was the only school in America chosen during that year to receive money for a conversion from CES. CES provided Olympic with resources to fund the planning process, which took place during the 2005-2006 school year. After the plan was completed and presented to CES, Olympic was given additional funds to begin implementing the plan during the 2006-2007 school year. The Olympic Community of Schools was formed to include the School of Math, Engineering, Technology and Science at Olympic (METS), the School of International Studies and Global Economics at Olympic (International Studies), the Renaissance School at Olympic (Renaissance), the School of International Business and Communications Studies at Olympic (International Business), and the School of Biotechnology, Health and Public Administration at Olympic (Biotech). Olympic was also awarded a conversion grant from the North Carolina New Schools Project. However, since Olympic received the CES grant, a decision was made to award the New Schools Project conversion grant to Garinger high school. Formal plans were created for the formation of the International Studies School at Garinger (International Studies), the New Technology High School at Garinger (New Tech), the Math and Science High School at Garinger (Math and Science); Leadership and Public Service High School at Garinger (LPS); and Business and Finance at Garinger (Business and Finance). However, rather than converting over to the small school format immediately, as Olympic did in 2006-2007, Garinger utilized a staggered roll out approach. In 2006-2007, New Tech and International Studies accepted 9th graders who applied to attend their schools rather than Garinger Traditional. In 2007-2008, Math and Science, LPS, and Business and Finance accepted 9th and 10th graders. Each small school added a grade level until 2009-2010. In 2009-2010, all five Garinger small schools enrolled all 9-12th graders and Garinger Traditional ceased to exist.

Purpose

This interim report examines whether converting Garinger and Olympic high schools into autonomous small schools positively impacted student achievement during their initial three years as small schools: 2006-2007, 2007-2008, 2008-2009. Analyses were conducted at four distinct levels, as outlined

below. First, quantitative analyses were used to compare small schools and comparison traditional high schools currently within CMS (tier 1). Secondly, these small schools were compared to their former traditional schools prior to their school conversions (tier 2). These first two levels were conducted to assess if school setting (i.e., small school versus traditional) impacts student achievement. Next, Olympic and Garinger small schools were compared to each other to see if there were any major differences (tier 3). Finally, individual small schools within Garinger and Olympic were compared to one another to assess if some small schools were more successful than others on each small school campus (tier 4).

Evaluation Questions

1. **Tier 1**: How do small schools compare with comparison traditional high schools in terms of student achievement outcomes?
    a. Olympic small schools vs. East Mecklenburg high & Mallard Creek high
    b. Garinger small schools vs. Zebulon B. Vance high & E.E. Waddell high
2. **Tier 2**: How do small schools compare with their own traditional high schools prior to conversion in terms of student achievement outcomes?
    a. Olympic small schools vs. Olympic traditional high
    b. Garinger small schools vs. Garinger traditional high
3. **Tier 3**: What are the major differences between small school sites in terms of student achievement outcomes?
    a. Olympic small schools vs. Garinger small schools
4. **Tier 4**: What are the major differences between small school sites in CMS in terms of student achievement outcomes?
    a. Variance within Olympic small schools
    b. Variance within Garinger small schools

METHOD

Student Sampling

The participants included in these analyses were students attending the five Olympic small schools and the five small schools at Garinger. Finding closely matched comparison high schools was challenging. However, comparison schools for Tier 1 analyses were identified based on the results of a hierarchical cluster analysis designed to 'cluster' similar high schools based on previous academic achievement *(i.e., 2007-2008 standardized EOC scale scores and EOC achievement levels*), current absence and suspension information *(i.e., 2008-2009 average Out of School Suspension (OSS) days, In-School Suspension (ISS) days, unexcused absences, and excused absences*), as well as the current demographic composition of the student body *(i.e., 2008-2009 school size, gender, race/ethnicity, percent of economically disadvantaged (ED) students, Limited English Proficiency (LEP), and Exceptional Child (EC)* status). Each school was assigned a coefficient based on the squared Euclidian distance from each other high school, such that the smaller the coefficient, the more similar the schools (based on the data used in the model). Based on these analyses, dendrograms were created that graphically represented the relationship between schools (See Appendix A). Schools within the same cluster as each small school, or branch of the dendrogram, were then examined and those with the smallest Euclidian distance coefficients were selected to serve as matched comparison traditional high schools for tier 1 analyses, since they were the best comparison high schools available.

Propensity matching was then used at the student level to create comparison groups for Olympic and Garinger small school students for Tier 1 analyses. Comparison students were selected from the matched comparison schools (i.e., comparison students for Olympic came from East Mecklenburg and Mallard Creek and comparison students for Garinger came from Vance and Waddell). Comparison groups were created for each school and each of the 5 gateway EOCs. Comparison students were matched to small school students based on ethnicity, gender, LEP status, ED status, EC status, AP/IB enrollment, 8th grade Reading and/or Math EOG scores, and unexcused absences. Appendix B displays the descriptive statistics for the match criteria variables for Garinger and Olympic small school students and their matched comparison groups for each EOC. While most groups matched well, there were some significant differences between small school students and their matched comparison group. For all 5 EOCs, a significantly higher percentage of Garinger students were enrolled in AP/IB courses than the matched comparison group of Waddell/Vance students. Garinger Algebra I students also had a significantly higher number of unexcused absences than the matched comparison group of Waddell/Vance Algebra I students (M = 8.37 vs. M = 6.84). Small school and matched comparison groups were comparable on all other matching criteria.

Student samples for Tier 2 included students at each school's former comprehensive high school from 2002-2005 and students at the small schools from 2006-2009. Although Garinger Traditional existed in 2006-2009, student data was not utilized for these years to avoid cross contaminating the effect of having small school students in those years. Tier 3 and 4 analyses utilized students at the small schools from 2006-2009.

Student Outcome Data

Standardized EOC scale scores and EOC achievement levels were obtained from the district data warehouse. To examine the level of academic equity, subgroup indicators such as gender, race/ethnicity, ED, LEP, and EC status were utilized to disaggregate academic achievement data appropriately.

Analyses

Appropriate analysis of variance tests were utilized to compare differences between standardized EOC scale scores for the five Gateway EOCs. As proposed, analyses were conducted to determine if any differences were found at each of the four levels in question. For Tier 1 analyses, growth outcomes were also examined using the NCDPI student growth calculations. For tier 4, a weighted average was calculated across the five EOCs within each school. Adjusted means were weighted by the number of students and averaged across each EOC.

RESULTS

Descriptive statistics are reported in terms of *grade, gender, race/ethnicity, ED, EC, LEP, AP, and IB status*, and *8th grade math and reading scores* by school for 2008-2009 (See Appendix C). In consideration of the four levels of analyses proposed for this study, comparisons between small schools, within small schools, and between small schools and their comparison traditional high schools are presented separately. For each tier we first provide demographic information for the groups being compared followed by descriptive comparisons of EOC proficiency. Lastly, we provide the statistical comparisons utilizing standardized EOC scores and/or NCDPI student growth calculations and employing various statistical control variables.

Tier 1: Comparison School Composite & Small School Composite

The best comparisons available were used for tier 1, however, the challenge in finding closely matched comparison high schools from which to select students for the matched sample should be highlighted. Comparison high schools were chosen based on the similarity in student body characteristics (i.e., racial/ethnic, gender, and socioeconomic compositions, as well as previous test scores). School climate and other school factors were not able to be included in the cluster analysis. For example, school climate and years of principalship experience varied between small schools and their comparison high schools. Unlike some comparison schools, many small schools had principals with less experience than the schools from which the matched comparison students were selected. Additionally, overcoming an extremely powerful existing negative attitude set within the community at the onset, as opposed to a fresh start like one comparison high school from which matched students were selected, is an added difficulty that should be noted. Therefore, small school principals not only had the challenge of forming a tight-knit small school environment that resulted in a positive learning context, but they also had the added challenge of adapting to a new leadership role within a school setting. In

sum, comparison schools were chosen strictly based on student characteristics, even though there were other differences between schools that may have been considered.

Descriptive statistics.

Demographics by comparisons. Appendix C shows that the Olympic small schools combined had a slightly higher composition of 10th graders (27.1% vs. 24.7; 25.8) and 11th graders (22.9% vs. 18.0; 22.5), and a slightly lower composition of 9th graders (30.6% vs. 37.7; 31.5) and 12th graders (19.4% vs. 19.6; 20.2) when compared to East Mecklenburg and Mallard Creek high schools, respectively. In regard to gender composition, female (50.1% vs. 52.0; 49.3) and male (49.9% vs. 48.0; 50.7) percentages for Olympic small schools hovered between that of the comparison high schools. For racial compositions, East Mecklenburg was within a 5.5% margin of the Olympic small schools for all races. Mallard Creek had approximately 10% more Black students and 10% fewer Hispanic students than the Olympic small schools. Compared to the Olympic smalls schools composite, East Mecklenburg had a slightly higher percentage of students with ED status (50.8% vs. 46.0), while Mallard Creek had a substantially lower percentage (34.8%). Olympic small schools were similar to their comparison schools with respect to EC status (7.8% vs. 9.7; 7.4). East Mecklenburg was similar to Olympic small schools (12.4% vs. 13.0), while Mallard Creek was slightly lower (5.0%) in the percent of students classified as LEP.

The absence of 12th graders for the 2008-2009 school year resulted in a high percentage of 9th through 11th attending Garinger small schools. Thus, the Garinger small schools composite showed a significantly higher composition of 9th graders (45.7% vs. 34.3; 34.1), and a slightly higher composition of 10th graders (30.8% vs. 26.1; 23.6) and 11th graders (23.4% vs. 18.8; 20.9) when compared to Vance and Waddell high schools, respectively. Gender varied slightly more between Garinger small schools and their comparisons, with fewer females (48.2% vs. 51.0; 51.2) and more males (51.8% vs. 49.0; 48.8%) at Garinger small schools than the comparison schools. Waddell was the most similar to the Garinger small schools in terms of racial composition, with approximately 5% fewer Black students, 5% more White and Hispanic students, and 4% fewer Asian students. Vance had approximately 8% more Black and Hispanic students than the Garinger small school composite. Therefore, racial composition was slightly closer for Garinger small schools and their comparisons than they were for Olympic small schools and their comparisons. Both comparison schools for Garinger small schools had a lower percentage of students with ED status (79.1% vs. 62.3; 72.9); with substantially fewer students at Vance with ED status. Garinger small schools had fewer students classified as EC when compared to Vance and Waddell (8.0% vs. 11.9; 13.3). Waddell was similar to Garinger small schools (23.8% vs. 24.6), while Vance was lower (14.3%) in the percent of students classified as LEP.

Academic achievement by comparisons. While Olympic small schools had similar numbers of students enrolled in Advanced Placement courses than East Mecklenburg and Mallard Creek, respectively (15.6% vs. 12.1; 16.0), Garinger small schools had more students enrolled in AP courses than Vance and Waddell, respectively (11.5% vs. 7.2; 5.4). Additionally, East Mecklenburg was the only school with students enrolled in IB courses (8.8%). Students attending both small schools had fewer students entering 9th grade proficient in math (Olympic 69.5% vs. 73.7; 72.0 and Garinger 50.1% vs. 61.9; 53.3) than their comparison schools. Olympic students were similar to students at East Mecklenburg and Mallard Creek. A similar percentage of Olympic small school students (78.7% vs. 77.9; 81.3) and slightly fewer

Garinger small school students (60.7% vs. 71.8; 65.3) than comparison school students entered high school proficient in reading.

Group comparisons: 2008-2009 EOC scores. We began by examining Olympic and Garinger small schools' overall EOC proficiency in relation to their matched comparison schools. We then used propensity-matched comparison groups comprised of students with similar demographic characteristics (Race, ED status, EC, LEP status) and previous academic performance (8th grade Math and/or Reading EOG scores) to the cohort of small school students taking each of the 5 gateway EOCs (Algebra I, Biology, English I, Civics and Economics, and U.S. History). A Multivariate Analysis of Covariance (MANCOVA) was used to compare Olympic and Garinger small school students to their specific matched comparison group for each EOC to determine whether significant differences existed in standardized EOC scores or on state calculated growth scores.

Overall EOC performance: small schools vs. their comparison high schools. Figure 1 shows the proficiency percentage at Olympic small schools, comparison schools, and CMS high schools as a whole from 2006-2007 to 2008-2009. The percent of students who were proficient on the 5 gateway EOCs has risen every year since 2006-2007. In 2008-2009, Olympic was on par with the CMS average and East Mecklenburg high school, but was still 7% lower than Mallard Creek high school.

Figure 1. Proficiency on the 5 Gateway EOCs over Time: Olympic and Comparison High Schools

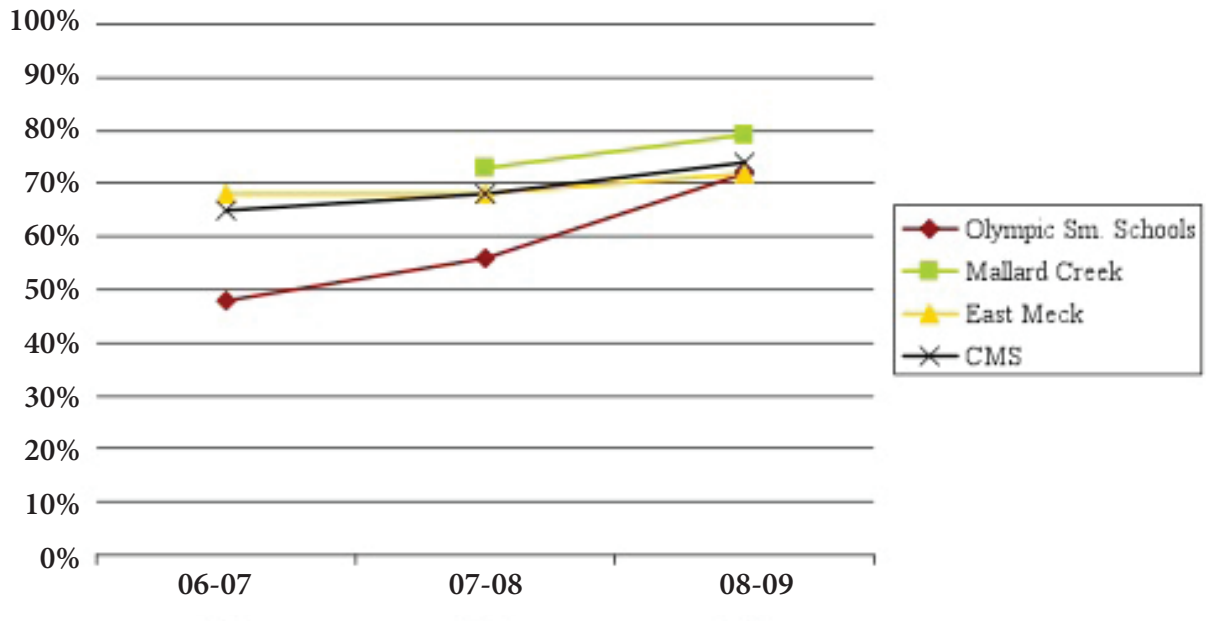
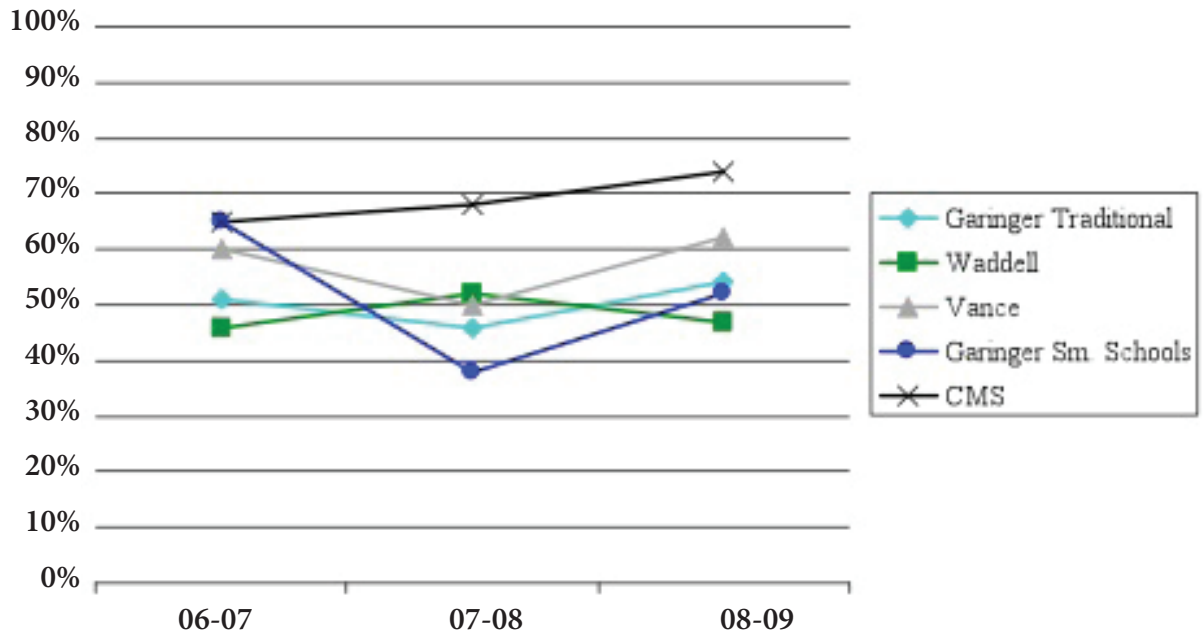


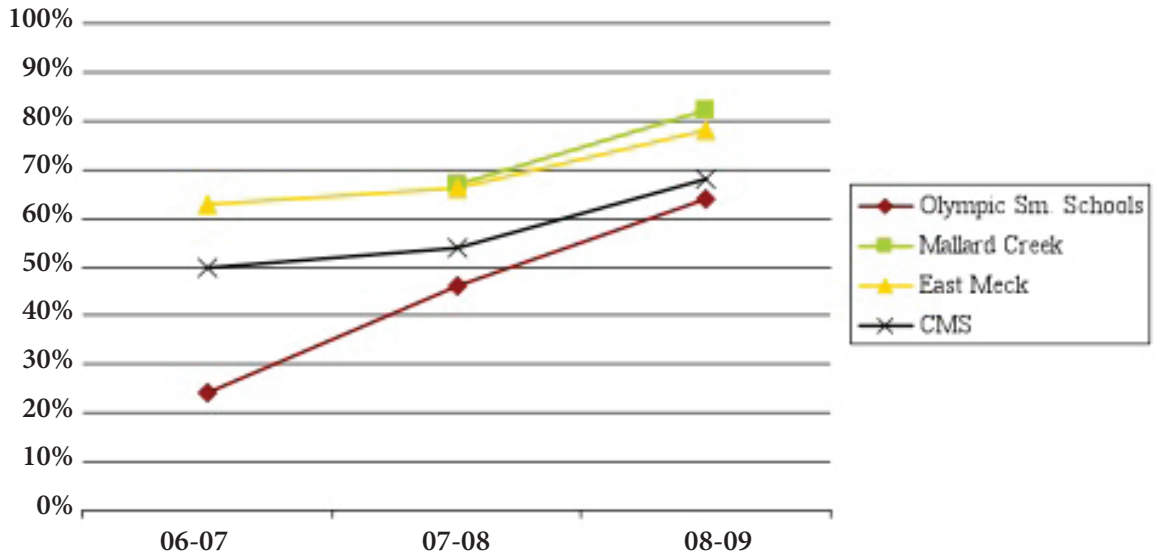
Figure 2 shows the proficiency percentage on the 5 gateway EOCs at the Garinger small schools, Garinger traditional high school, comparison schools, and CMS high schools as a whole from 2006-2007 to 2008-2009. Because Garinger is phasing out its traditional high school one year at a time, we included both Garinger traditional and Garinger small schools in the graph. Garinger small schools scored above comparison schools and on par with the CMS average in 2006-2007, with their first cohort of students. However, scores declined sharply in 2007-2008 with the addition of more students and more small schools. Scores improved in 2008-2009 so that proficiency on the 5 gateway EOCs at the Garinger small schools was on par with Garinger traditional, slightly better than Waddell, but 10% lower than Vance.

Figure 2. Proficiency on the 5 Gateway EOCs over Time: Garinger and Comparison High Schools



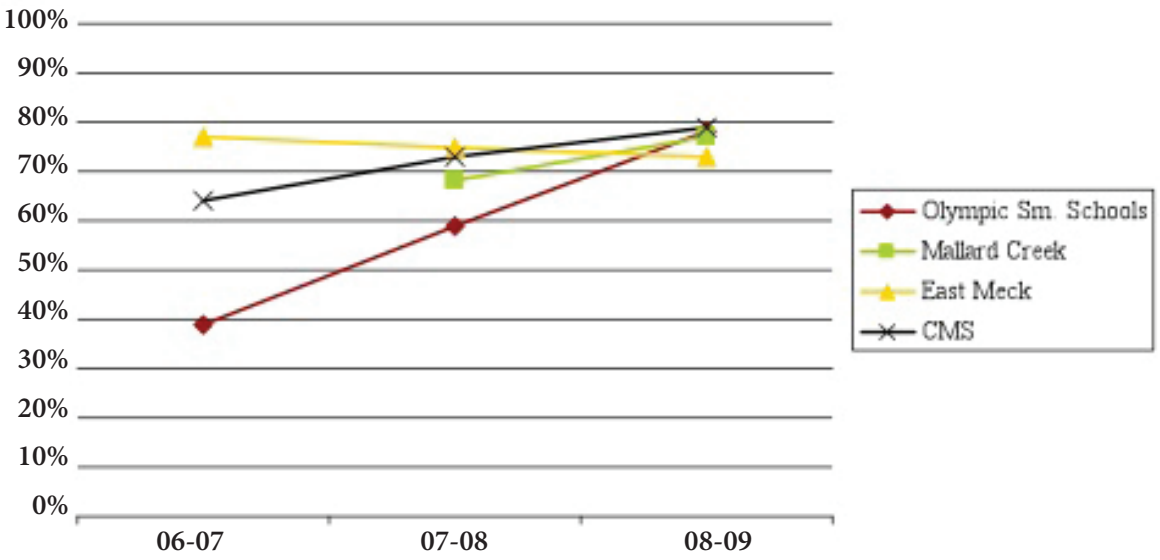
Individual EOC performance: Olympic vs. Mallard Creek and East Mecklenburg. In Algebra I (Figure 3), Olympic has generally performed less well than comparison schools since converting to the small school format. However, steady improvements have been made since 2006-2007.

Figure 3. Algebra I Proficiency over Time: Olympic and Comparison High Schools



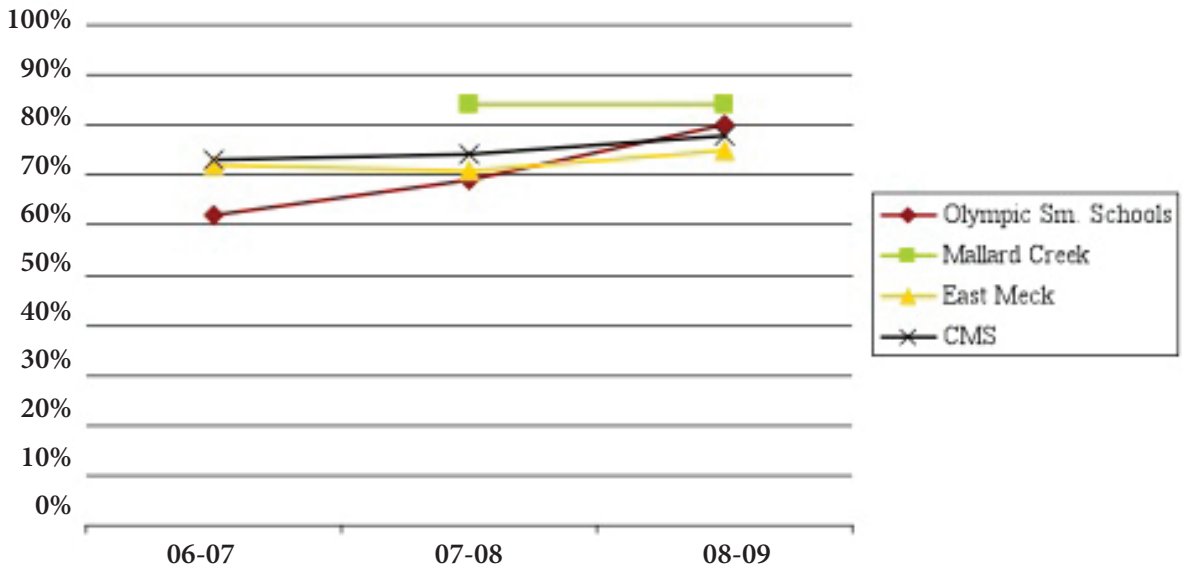
Biology proficiency at Olympic were low in 2006-2007, but since then have recovered and are now on par with or slightly better than comparison schools (Figure 4).

Figure 4. Biology Proficiency Over Time: Olympic and Comparison High Schools



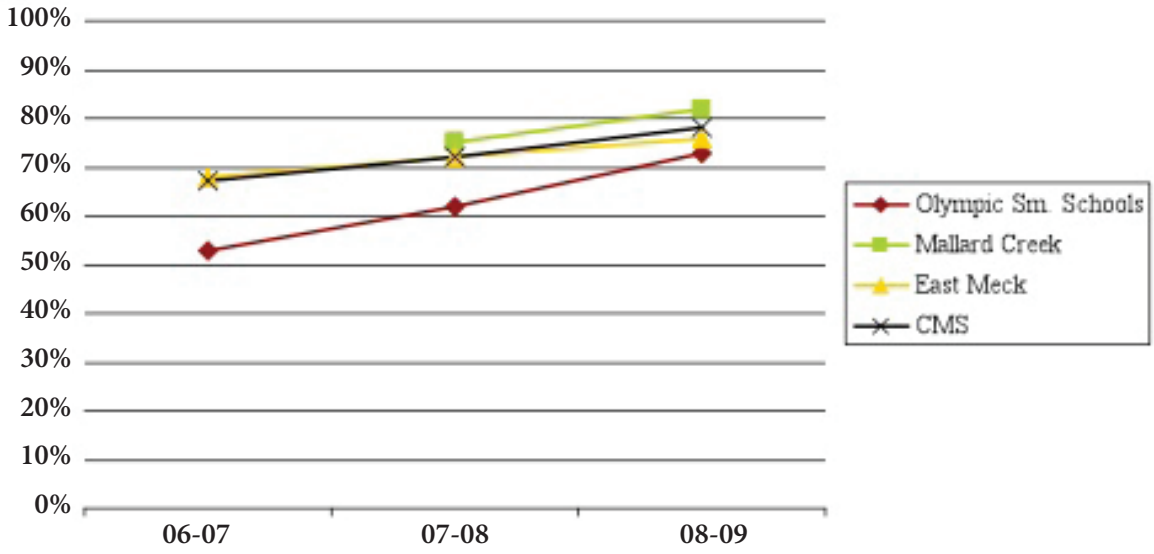
English I proficiency at Olympic have generally remained similar to East Mecklenburg and the CMS average over the years (Figure 5). Though proficiency is slightly lower at Olympic than Mallard Creek, steady improvements have been made since 2006-2007.

Figure 5. English I Proficiency over Time: Olympic and Comparison High Schools



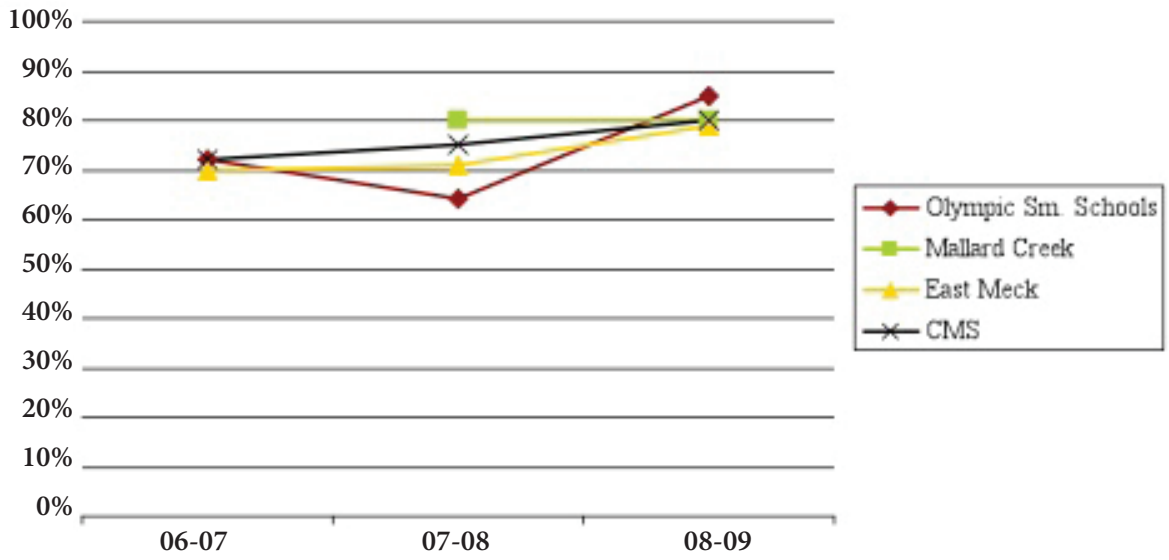
Civics and Economics proficiency at Olympic small schools was approximately 10% lower than comparison schools until 2008-2009. In 2008-2009 Olympic students were 9% lower than Mallard Creek students and 3% lower than East Mecklenburg students in the percent proficient on the Civics and Economics EOC (Figure 6).

Figure 6. Civics & Economics Proficiency Over Time: Olympic and Comparison High Schools



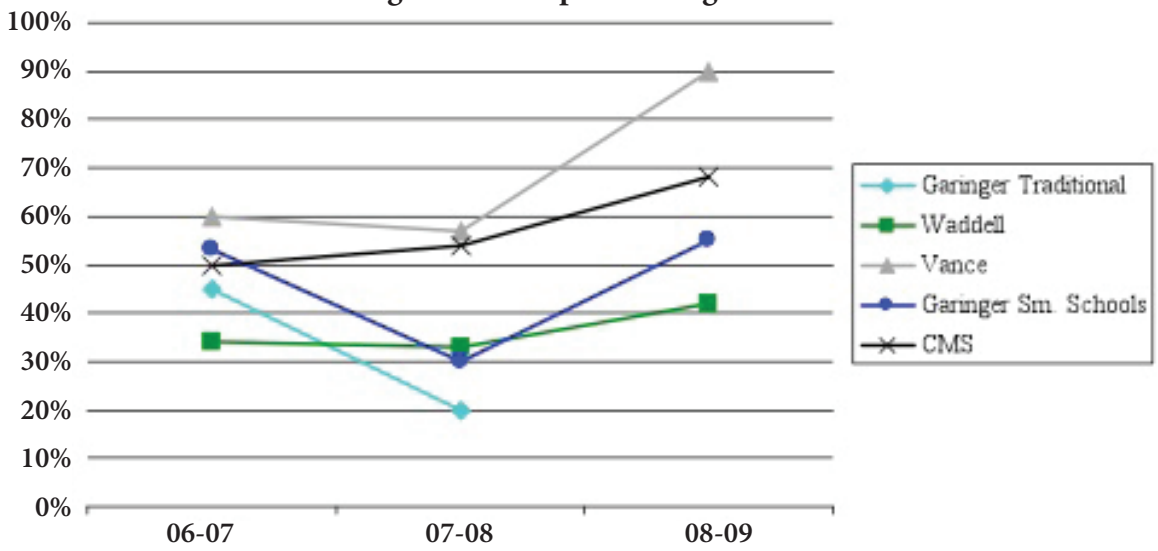
Olympic students generally remained on par with comparison schools in U.S. History since conversion to small schools (Figure 7). After a slight decrease in 2007-2008, slightly more students scored in the proficient range in 2008-2009 than students at comparison schools.

Figure 7. U.S. History Proficiency over Time: Olympic and Comparison High Schools



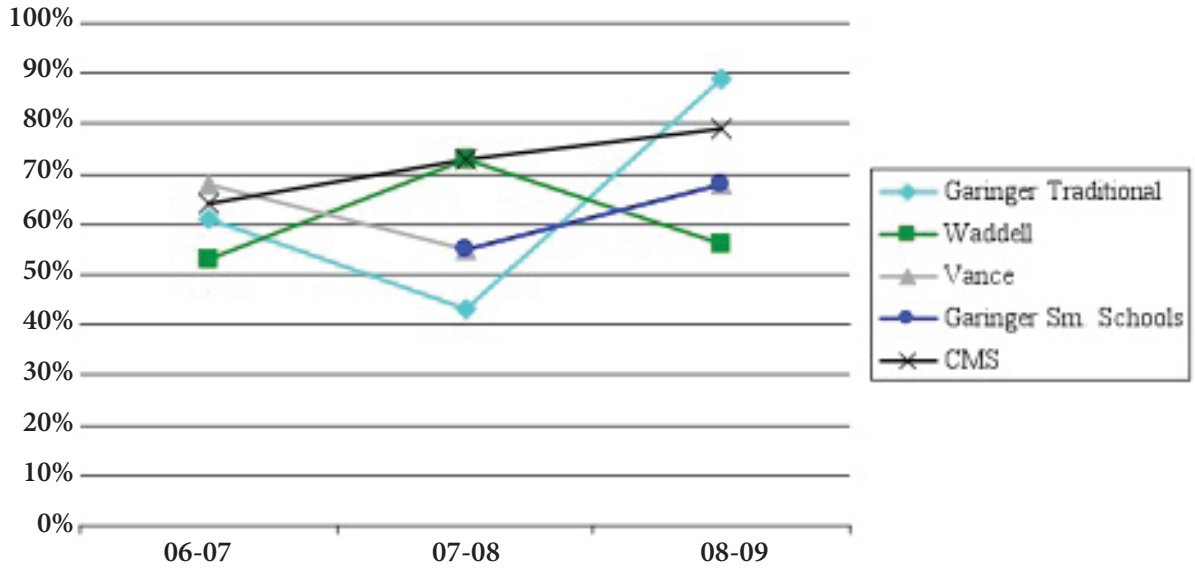
Individual EOC performance: Garinger vs. Waddell and Vance. In Algebra I (Figure 8), Garinger small schools outperformed Garinger and Waddell students but scored lower than Vance students in 2006-2007. In 2007-2008 Garinger small school students dropped well below Vance students, and slightly below Waddell students. In 2008-2009, Garinger small school students improved beyond Waddell students but remained well below Vance students in Algebra I proficiency.

Figure 8. Algebra I Proficiency over Time: Garinger and Comparison High Schools



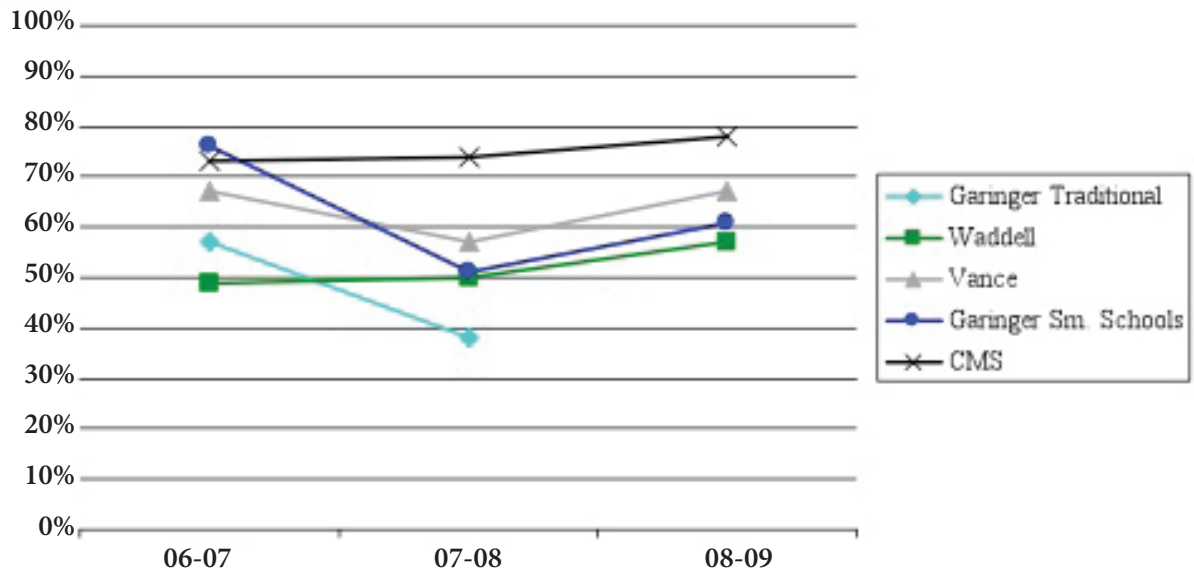
In Biology (Figure 9) Garinger small schools had no scores in 2006-2007 and performed on par with Vance in 2007-2008 and 2008-2009. Waddell outperformed Garinger small school students in 2007-2008, but not in 2008-2009. Garinger Traditional experienced a large gain in 2008-2009, outperforming Garinger small school students, both comparison schools and CMS as a whole.

Figure 9. Biology Proficiency over Time: Garinger and Comparison High Schools



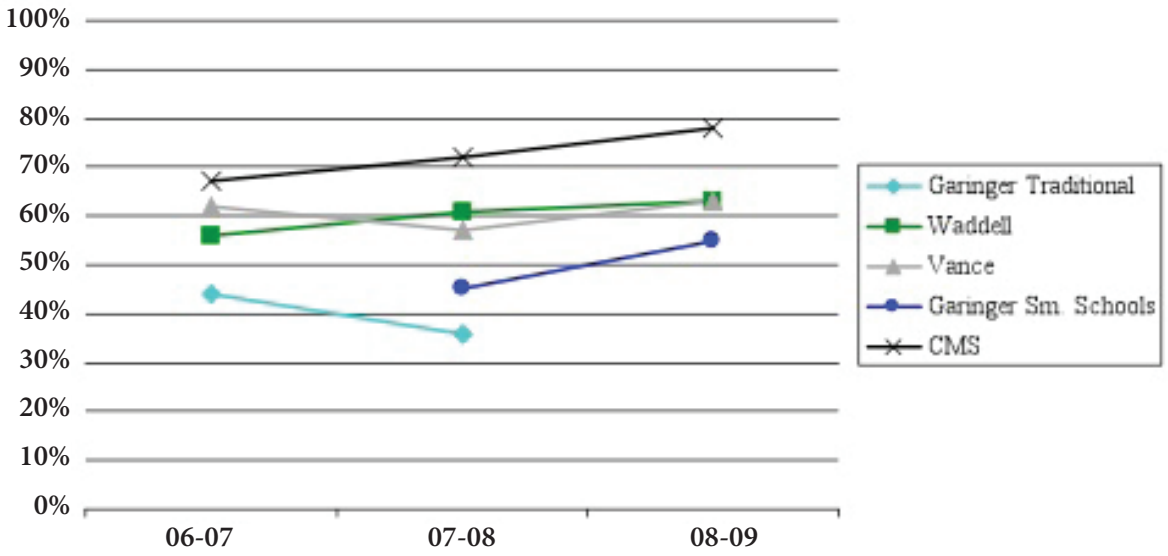
On English I (Figure 10), Garinger small schools performed well in 2006-2007, achieving higher levels of proficiency than comparison schools, on par with CMS as a whole. In 2007-2008 proficiency dropped at the small schools; students performed slightly better than Waddell students and slightly worse than Vance students. In 2008-2009, students at all three schools improved with small school students still underperforming Vance and outperforming Waddell.

Figure 10. English I Proficiency over Time: Garinger and Comparison High Schools



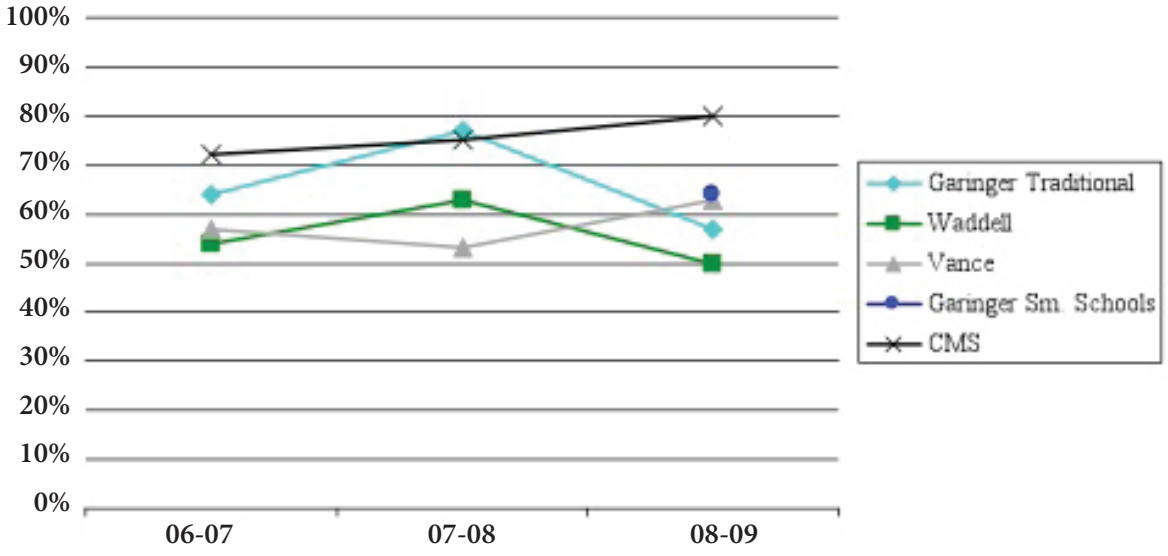
No Garinger small school students took the Civics and Economics exam in 2006-2007. In 2007-2008 Garinger small school students performed better than Garinger traditional students, but worse than both Waddell and Vance students. Though Garinger small schools' proficiency improved in 2008-2009, Waddell and Vance students still outperformed them.

Figure 11. Civics & Economics Proficiency over Time: Garinger and Comparison High Schools



No Garinger small schools students took the U.S. History exam until 2008-2009. In that year, Garinger small school students outperformed Waddell students and were on par with Vance students in the percent of students proficient in U.S. History.

Figure 12. U.S. History Proficiency over Time: Garinger and Comparison High Schools



Matched group comparisons. Multivariate Analysis of Covariance (MANCOVA) analyses were used to assess the effect of the small school environment on student EOC scores and NCDPI calculated growth scores for 2008-2009. Matched comparison groups comprised of students from the two comparison schools were created using propensity matching (described above) for each school and each EOC. Group (Garinger/Olympic vs. matched comparison) was entered into the model as a fixed effect and 8th grade Reading and/or Math EOG scores were included as covariates. An eta squared (η^2) was calculated as an estimate of the size of the effect of each variable. Effect sizes of less than 0.10 are considered small. A medium effect size ranges from .10-.80 and a large effect size is greater than .80. Table 1 shows the adjusted mean z-scores and growth scores for Olympic and Garinger students and their matched comparison group and Table 2 reports the MANCOVA results including effect size estimates.

On average, Olympic small school students scored significantly lower (Olympic Adj. M = -0.22, Comparison Adj. M = 0.09) than the matched comparison group on Algebra I, $F(1,508)=36.92$, $p<.001$, and English I (Olympic Adj. M = 0.00, Comparison Adj. M = 0.20), $F(1, 728)=26.01$, $p<.001$. Though the differences between groups were statistically significant, the effect sizes (or the magnitude of the difference) were small (Algebra I $\eta^2= .07$, English I $\eta^2 = .03$). Growth scores were also significantly lower for Olympic students than comparison students on Algebra I (Olympic Adj. M = 0.14, Comparison Adj. M = 0.44), $F(1,508)=36.28$, $p<.001$, and English I (Olympic Adj. M = 0.08, Comparison Adj. M = 0.27),

$F(1,728)=24.75$, $p<.001$. Again, though the differences between groups were statistically significant, the effect sizes were small (Algebra I $\eta^2= .07$, English I $\eta^2= .03$). Olympic students scored significantly higher than the matched comparison group in Biology (Olympic Adj. M = 0.24, Comparison Adj. M = -0.05), $F(1,624) = 36.24$, $p<.001$, and U.S. History (Olympic Adj. M = 0.14, Comparison Adj. M = 0.44), $F(1,631) = 21.99$, $p<.001$. Effect sizes were small (Biology $\eta^2= .04$, U.S. History $\eta^2= .03$). Growth scores were significantly higher for Olympic students than comparison students in Biology (Olympic Adj. M = 0.24, Comparison Adj. M = -0.08), $F(1,624) = 27.53$, $p<.001$, Civics and Economics (Olympic Adj. M =0.22, Comparison Adj. M =0.07), $F(1,814) = 13.80$, $p<.001$, and U.S. History (Olympic Adj. M =0.45, Comparison Adj. M =0.08), $F(1,631) = 77.27$, $p<.001$. Effect sizes for Biology and Civics and Economics were small (Biology $\eta^2=.06$, Civics and Economics $\eta^2=.02$). However a medium effect size of $\eta^2 = .11$ was found in favor of Olympic for U.S. History growth scores. No statistically significant differences were found between Olympic and comparison students on Civics and Economics scores, $F(1,814) = .006$, $p=.94$.

Garinger small school students scored significantly lower than the matched comparison group on Algebra I (Garinger Adj. M = -0.36, Comparison Adj. M = -0.21), $F(1,386) = 4.90$, $p<.05$ and Civics and Economics (Garinger Adj. M = -0.38, Comparison Adj. M = -0.23), $F(1,526) = 7.86$, $p<.01$. Though the differences between groups were statistically significant, the effect sizes (or the magnitude of the difference) were small (Algebra I $\eta^2= .01$, Civics and Economics $\eta^2= .02$). Growth scores were also significantly lower for Garinger students than comparison students on Algebra I (Garinger Adj. M = 0.08, Comparison Adj. M = 0.26), $F(1,386) = 6.52$, $p<.05$, and Civics and Economics (Garinger Adj. M = 0.02, Comparison Adj. M = 0.13), $F(1.526) = 3.96$, $p<.05$. Again, though the differences between groups were statistically significant, the effect sizes were small (Algebra I $\eta^2= .02$, Civics and Economics I $\eta^2= .01$). Garinger students scored significantly higher than the matched comparison group on

Biology (Garinger Adj. M = -0.14, Comparison Adj. M = -0.39), F(1,505) = 18.67, p<.001, but again, the effect size was small (Biology η^2= .04). Growth scores were significantly higher for Garinger students than comparison students on Biology (Garinger Adj. M = 0.25, Comparison Adj. M = 0.02), F(1, 505) = 18.60, p<.001, and U.S. History (Garinger Adj. M =0.18, Comparison Adj. M =-0.03), F(1,478) = 15.14, p<.001. Effect sizes for Biology and U.S. History growth were small (Biology η^2=.04, U.S. History η^2=.03). No statistically significant differences were found between Garinger and comparison students on English I, F(1,715) = 2.32, p=.13, U.S. History, F(1,478) = .61, p=.44, or English I growth, F(1, 715) = 2.40, p=.12.

Table 1. Adjusted Z-score and Growth Score Means by Group

Variable	N	Adj. Mean z Sm Sch	Std. Error	Adj. Mean z Comp	Std. Error	Adj. Mean Growth Sm Sch	Std. Error	Adj. Mean Growth Comp	Std. Error
Algebra I									
Olympic vs. Comparison	511	-0.22	0.04	0.09	0.04	0.14	0.04	0.44	0.04
Garinger vs. Comparison	389	-0.36	0.05	-0.21	0.05	0.08	0.05	0.26	0.05
English 1									
Olympic vs. Comparison	731	0.00	0.03	0.20	0.03	0.08	0.03	0.27	0.03
Garinger vs. Comparison	718	-0.39	0.03	-0.46	0.03	0.15	0.03	0.08	0.03
Biology									
Olympic vs. Comparison	628	0.24	0.04	-0.05	0.04	0.24	0.04	-0.08	0.04
Garinger vs. Comparison	509	-0.14	0.04	-0.39	0.04	0.25	0.04	0.02	0.04
Civics & Economics									
Olympic vs. Comparison	817	0.10	0.03	0.10	0.03	0.22	0.03	0.07	0.03
Garinger vs. Comparison	529	-0.38	0.04	-0.23	0.04	0.02	0.04	0.13	0.04
U.S. History									
Olympic vs. Comparison	634	0.43	0.04	0.20	0.04	0.45	0.03	0.08	0.03
Garinger vs. Comparison	481	-0.09	0.05	-0.14	0.04	0.18	0.04	-0.03	0.04

Table 2. MANCOVA Analyses Results.

	DV=z score						DV= growth score					
Variable	N	MS	df	F	effect size		N	MS	df	F	effect size	
Algebra I												
Olympic vs. Comparison	511	9.28	1	28.85***	0.05	SS<C[1]	511	9.07	1	28.56***	0.05	SS<C
Garinger vs. Comparison	389	2.20	1	4.89*	0.01	SS<C	389	2.91	1	6.52*	0.02	SS<C
English I												
Olympic vs. Comparison	731	7.26	1	26.01***	0.03	SS<C	731	6.81	1	24.75***	0.03	SS<C
Garinger vs. Comparison	718	0.74	1	2.32	-	-	718	0.78	1	2.40	-	-
Biology												
Olympic vs. Comparison	628	12.47	1	27.53***	0.04	SS>C	628	16.28	1	36.24***	0.06	SS>C
Garinger vs. Comparison	509	7.58	1	18.60***	0.04	SS>C	509	6.99	1	18.67***	0.04	SS>C
Civics & Economics												
Olympic vs. Comparison	817	0.00	1	0.01	-	-	817	5.10	1	13.80***	0.02	SS>C
Garinger vs. Comparison	529	3.09	1	7.86**	0.02	SS<C	529	1.46	1	3.96*	0.01	SS<C
U.S. History												
Olympic vs. Comparison	634	8.81	1	21.99***	0.03	SS>C	634	22.59	1	77.28***	0.11	SS>C
Garinger vs. Comparison	481	0.29	1	0.61	-	-	481	5.39	1	15.14***	0.03	SS>C

[1] SS= Small School Students, C= Matched Comparison Students

Tier 2: Small School Composite & Traditional High School Comparison

Descriptive statistics.

Demographics by comparison. Demographic results for 2008-2009 are not presented for Olympic traditional high school, since they transitioned during the 2006-2007 school year (See Appendix C). Therefore, we used demographic data from 2005-2006 to compare Olympic's traditional high school with a composite of its current small schools. Grades compositions remained consistent across conversions. All categories of race/ethnicity comparisons remained similar between conversions of Olympic small schools, with the exception of a decrease in white students (34.5% to 27.9) and an increase in Hispanic students (14.2% to 18.8). Following Olympic conversion, the gender minority actually became males (F=49.7% to 50.1; M=50.3% to 49.9). The percentage of students with ED status increased (39.7% to 46.0) and students considered LEP slightly increased following conversion. In contrast, the percentage of students considered EC decreased (9.1% to 7.8) following Olympic's conversion to small schools.

To be consistent between small schools, demographic data from 2005-2006 were used for to make a comparisons between Garinger's traditional high school and a composite of its current small schools. Garinger small schools will have its first senior class in 2009-2010. Considering the conversion strategy of Garinger, it is inappropriate to make major comparisons based on grade compositions between Garinger traditional and Garinger small schools in 2008-2009. All categories of race/ethnicity comparisons remained similar between conversions of Garinger traditional to Garinger small schools, with the exception of an increase in Hispanic students (19.3% to 26.5%). Gender trends reversed themselves following conversion, with Garinger small schools being composed of slightly more males (46.2% to 51.8%) than females (53.8% to 48.2%) when compared to Garinger traditional. Percentages of students with ED status (67.9% to 79.1%) and LEP students (18.2% to 24.6%) increased slightly in Garinger small schools following conversion, while the percentage of EC students decreased following conversion (13.4% to 8.0%).

Academic achievement by comparisons. Although data for AP and IB enrollment was not available for both Olympic traditional and Garinger traditional, 8th grade math and reading scores were available for analysis. When compared to Olympic traditional, Olympic small schools had fewer students entering high school proficient in 8th grade math (83.2% to 69.5%) and reading (86.1% to 78.7%). The percentage of students proficient in 8th grade math and reading also decreased significantly for Garinger small schools following conversion (math 71.2% to 50.1%; reading 76.4% to 60.7%). On a cautionary note, these decreases may reflect changes in the 8th grade EOGs over time rather than reduced ability of students. If we consider standardized z-scores (standardized to the state means and standard deviations) instead, Olympic small school students outperform Olympic traditional students in 8th grade math by .2 standard deviations (-.13 to .05) and perform similarly to Olympic traditional students in 8th grade reading (-.11 to -.09). Garinger small school students also outperformed Garinger traditional students in 8th grade math by .2 standard deviations (-.54 to -.34) and perform similarly to Garinger traditional students in 8th grade reading (-.54 to -.56).

Group comparisons: 2003-2004 to 2008-2009 EOC scores. For tier 2, we began by examining Olympic and Garinger small schools' overall EOC performance in relation to their traditional high school prior

to small school conversion. We took a snapshot of the three consecutive year's worth of data for the traditional high school prior to conversion, where available (2003-2004; 2004-2005; 2005-2006). We compared these years to the first three consecutive years of data for its small school following conversion (2006-2007; 2007-2008; 2008-2009). If data points are missing in the figures, that school did not test for that specific EOC in that year.

We then conducted two Analysis of Variance (ANOVA) tests for each school x EOC pair. First we compared all students that took a particular EOC in the former traditional school to all students that took a particular EOC in the small school, regardless of year. We then compared scores by year to examine changes over time from 2003-2004 to 2008-2009. Since state calculated growth scores were not available prior to 2006-2007, standardized EOC scores were the only outcome variable examined.

Overall EOC performance: small school vs. traditional high school. Although Olympic traditional had a slight increase in overall EOC performance from 2003-2004 to 2004-2005, they remained around 60% proficient and even experienced a dip in scores prior to small school conversion in 2005-2006 (65% to 54%). As evident in Figure 13, Olympic small schools have experienced consistent increases in overall EOC performance since their conversion (48%, 56%, 72%). Furthermore, by their third year as Olympic small schools, they had surpassed 2004-2005 Olympic traditional scores – their highest in the three years prior to conversion (72% vs. 65%).

Figure 13. Proficiency on the 5 Gateway EOCs over Time: Olympic Traditional and Olympic Small Schools

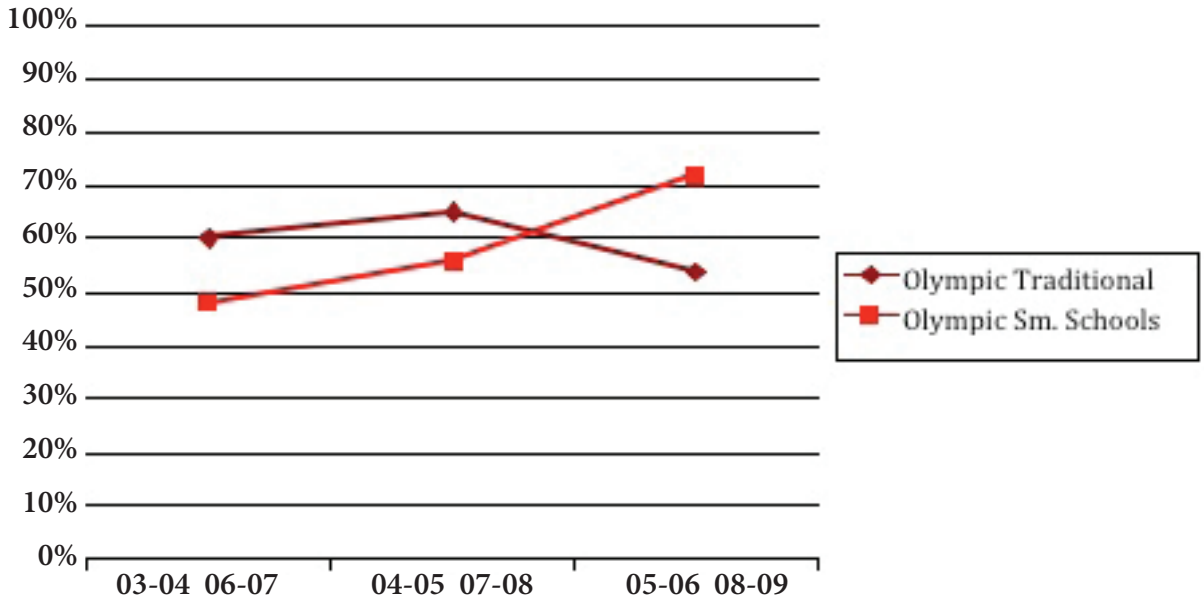
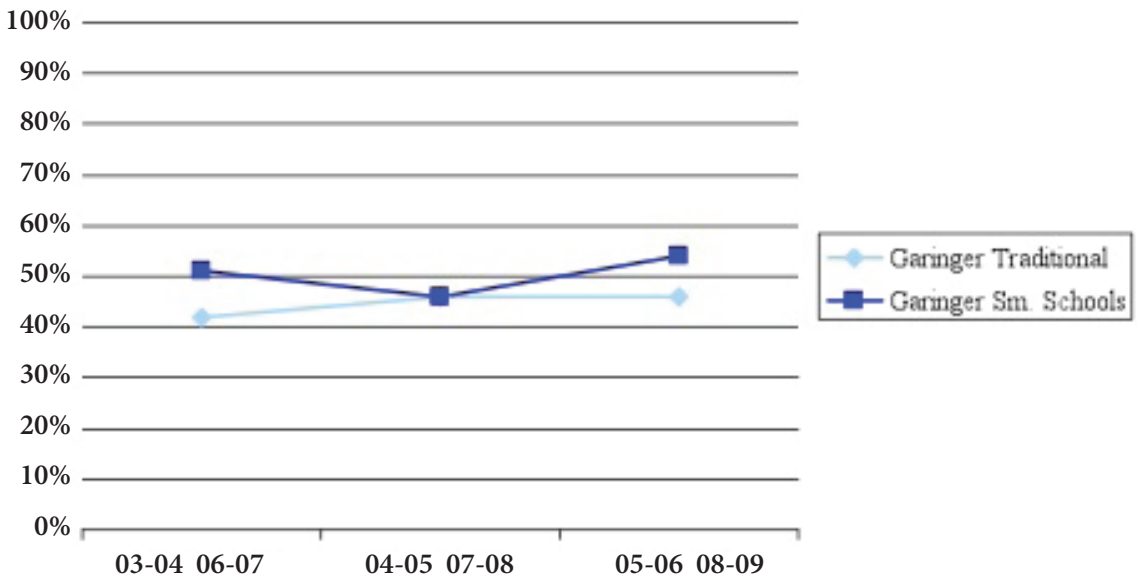


Figure 14 shows Garinger small schools to have higher overall EOC performance for their first three years as compared to Garinger traditional in their last three years prior to conversion, particularly in 2008-2009 where Garinger small schools were 54% proficient. Although Garinger traditional increased their scores slightly from 2003-2004, their scores remained slightly below what Garinger small schools would accomplish in the following years, even with a slight dip in scores for 2007-2008.

Figure 14. Proficiency on the 5 Gateway EOCs over Time: Garinger Traditional and Garinger Small Schools



Individual EOC performance: Olympic small schools vs. Olympic traditional high school. Figure 15 illustrates how Algebra I proficiency for Olympic traditional students decreased gradually in the three years leading to small school conversion, while scores for Olympic small schools have increased dramatically since conversion (24% in 2006-2007 to 64% in 2008-2009). By their third year, Olympic small schools were more proficient than any of the previous years. It should be noted that the Algebra I EOC was renormed in 2006-2007, probably accounting for the drop in proficiency between 2005-2006 and 2006-2007.

Figure 15. Algebra I Proficiency over Time:
Olympic Small Schools vs. Olympic Traditional High School

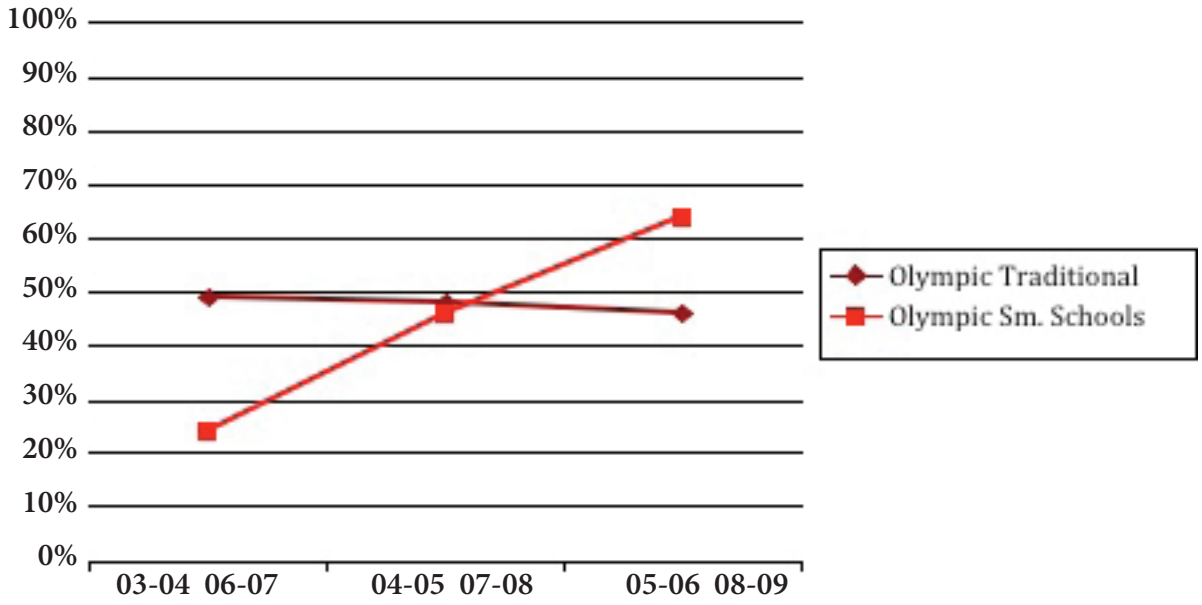


Figure 16 illustrates how Biology scores for Olympic small schools have increased dramatically since conversion (39% in 2006-2007 to 78% in 2008-2009). By their second year, Olympic small schools were more proficient than any of the previous years.

Figure 16. Biology Proficiency over Time:
Olympic Small Schools vs. Olympic Traditional High School

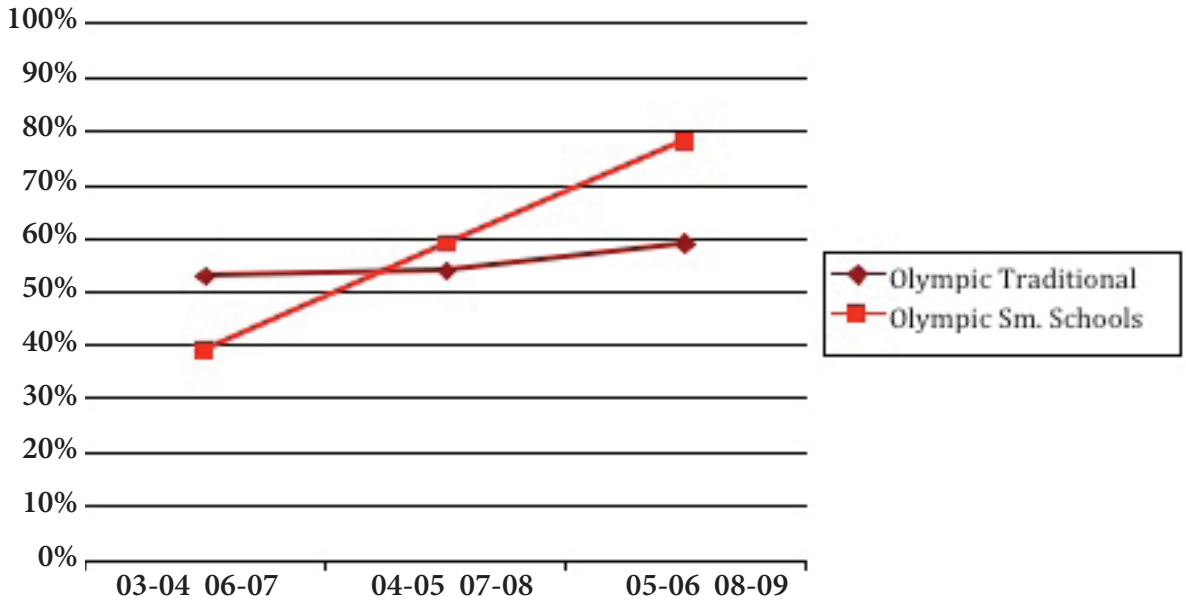
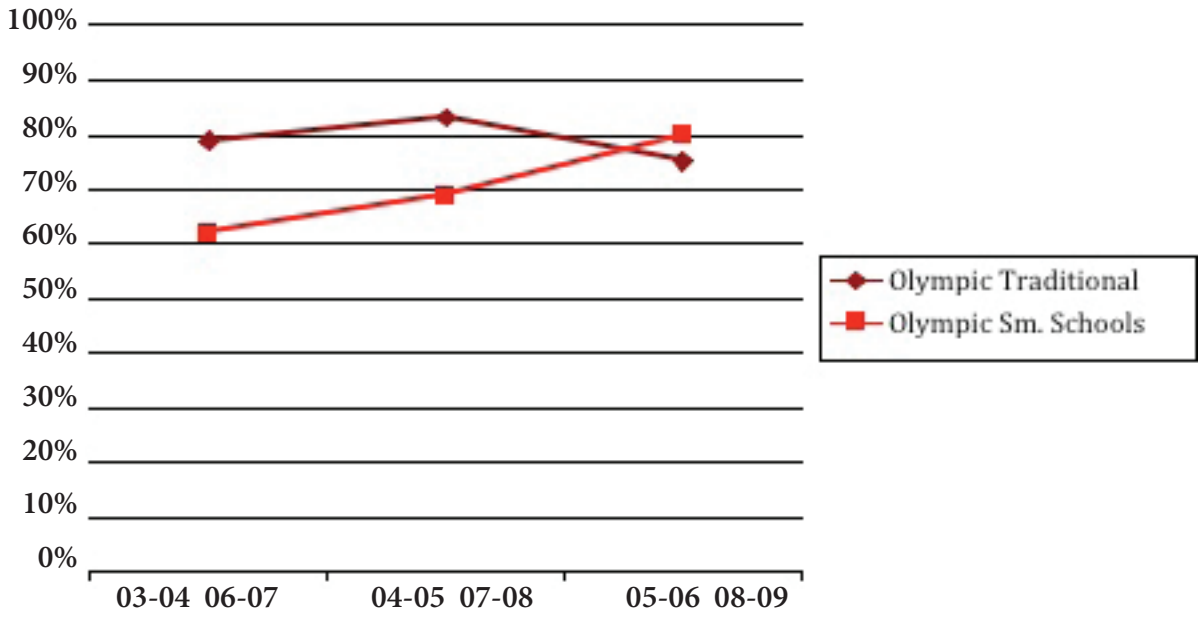


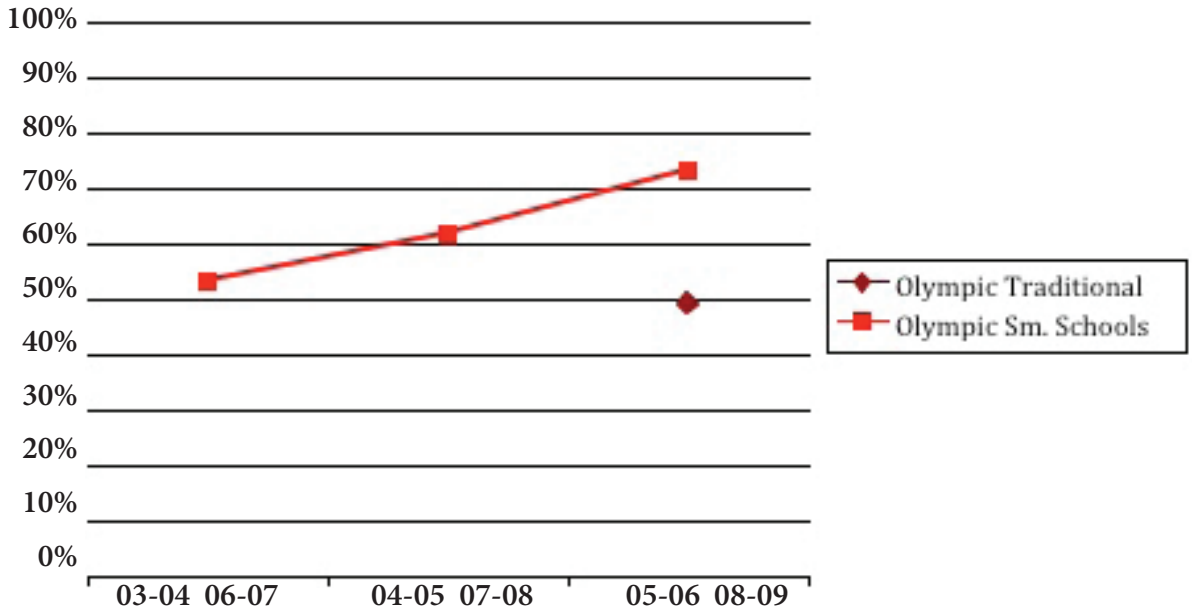
Figure 17 shows Olympic traditional had a slight increase in English I scores from 2003-2004 to 2004-2005 but a slight decrease in scores for 2005-2006. Although Olympic small schools increased their English I performance each year since conversion, small school proficiency did not surpass 2004-2005 Olympic traditional scores. It should be noted that the English I EOC was renormed in 2006-2007, probably accounting for the drop in proficiency between 2005-2006 and 2006-2007.

Figure 17. English I Proficiency over Time:
Olympic Small Schools vs. Olympic Traditional High School



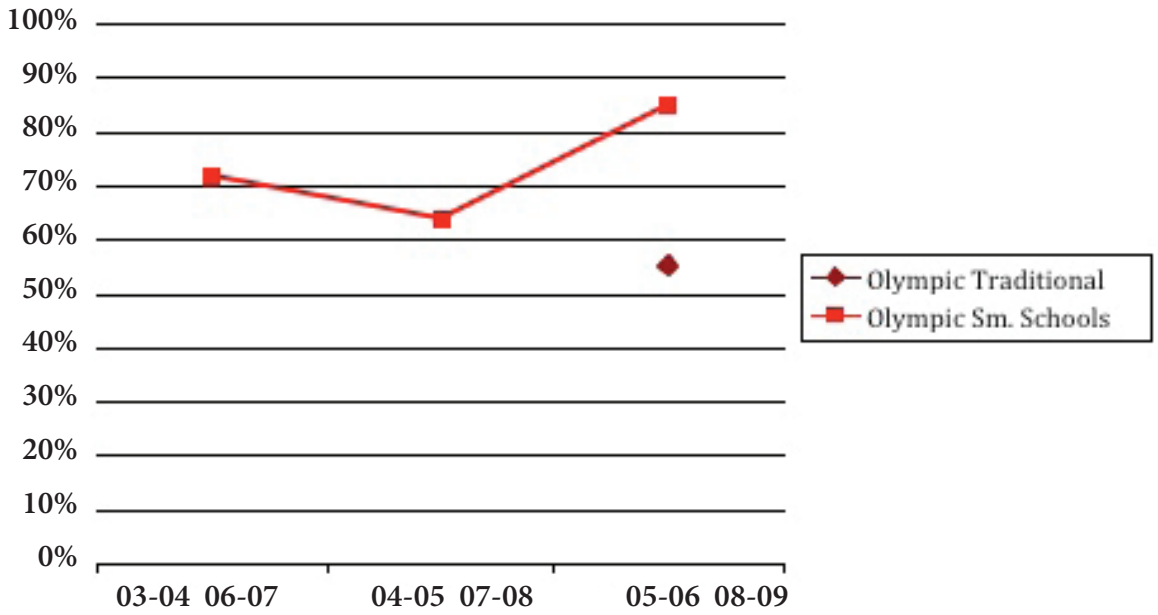
In figure 18, Olympic traditional is shown to have first taken the Civics and Economics EOC in 2005-2006 (49% proficient). Olympic small schools increased their performance every year since conversion (53%, 62%, 73%), as well as exceeding Olympic traditional scores.

Figure 18. Civics & Economics Proficiency over Time: Olympic Small Schools vs. Olympic Traditional High School



In figure 19, Olympic traditional is shown to have first taken the U.S. History EOC in 2005-2006 (55% proficient). Performance for Olympic small schools decreased slightly in 2007-2008 (72% to 64%), but increased significantly in 2008-2009 (85%), exceeding Olympic traditional scores.

Figure 19. U.S. History Proficiency over Time:
Olympic Small Schools vs. Olympic Traditional High School



Individual EOC performance: Garinger small schools vs. Garinger traditional high school. Figure 20 shows consistent Algebra I scores for Garinger traditional in the three years leading up to small school conversion, with a slight increase in their final year, 2005-2006 (from 49% to 52%). Following conversion, Garinger small schools had a dip in Algebra I performance in their second year, 2007-2008, but slightly surpassed all previous years for Garinger traditional and Garinger small schools in 2008-2009, with 55% of students scoring proficient on the Algebra I EOC.

Figure 20. Algebra I Proficiency over Time:
Garinger Small Schools vs. Garinger Traditional High School

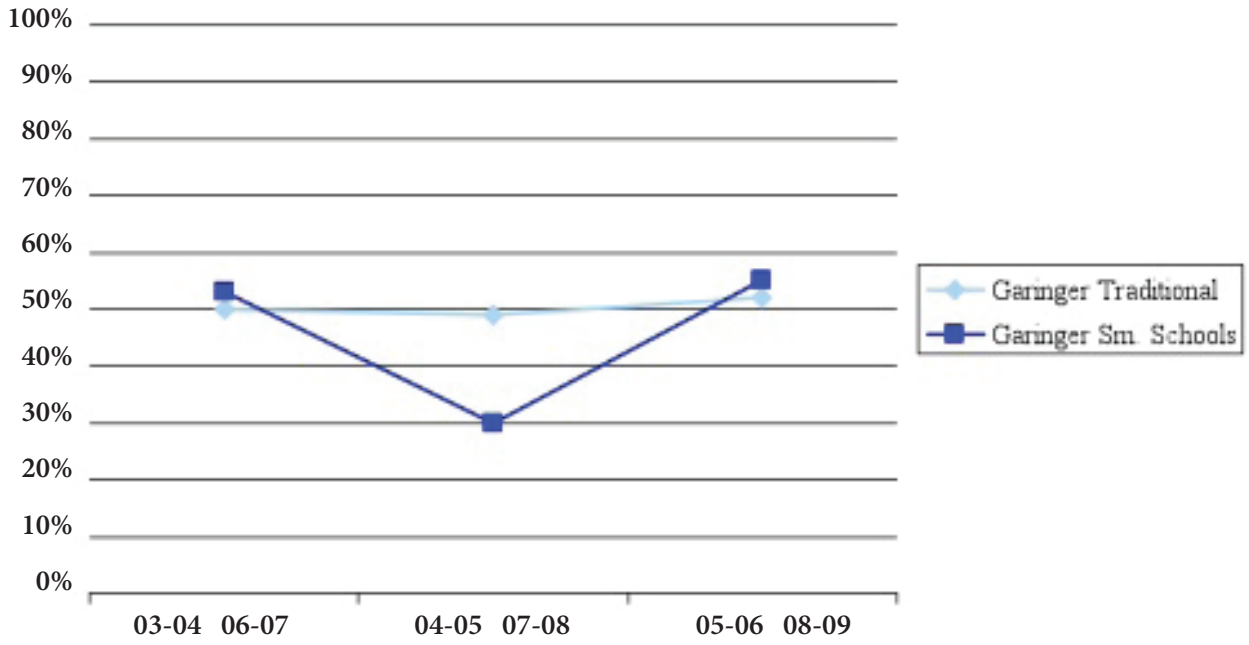
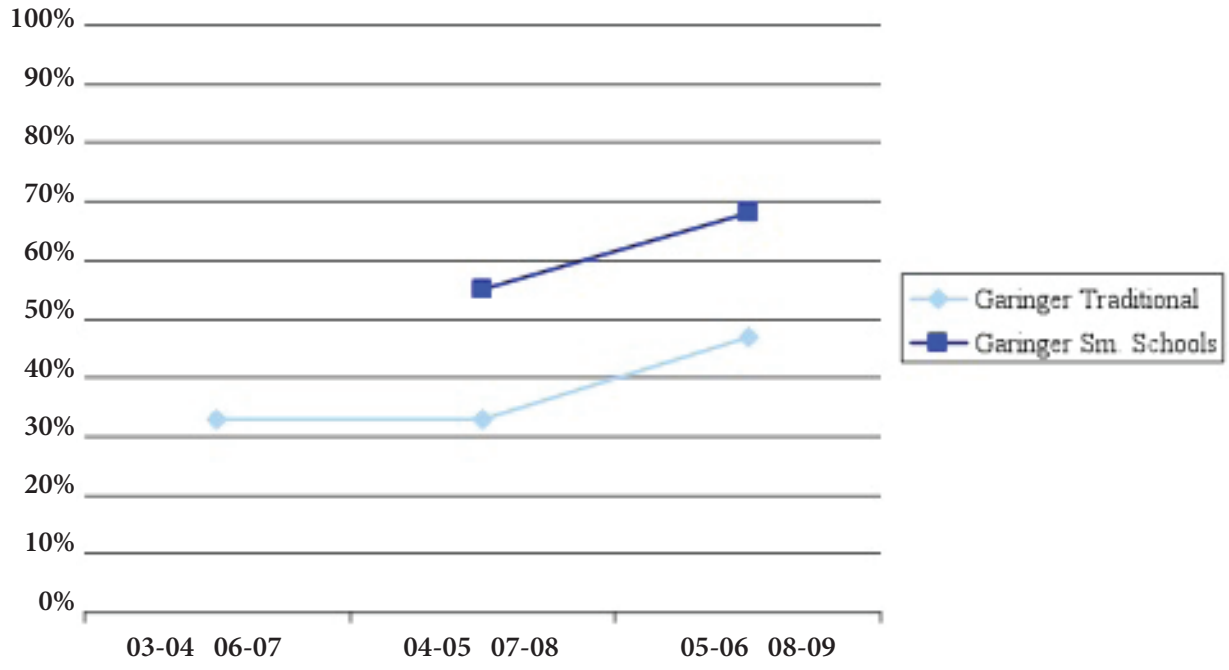


Figure 21 shows consistently low Biology scores for Garinger traditional in the three years leading up to small school conversion, with an increase in their final year, 2005-2006 (from 33% to 47%). Following conversion, Garinger small schools increased their proficiency on the Biology EOC for two consecutive years in a row (55% in 2007-2008 and 68% in 2008-2009).

Figure 21. Biology Proficiency over Time:
Garinger Small Schools vs. Garinger Traditional High School



In figure 22, Garinger traditional showed improvement on the English I EOC over the three years leading to small school conversion, with a slight dip in 2005-2006. In the first year following small school conversion, Garinger small schools showed significant improvement in English I performance, but in 2007-2008 their scores dipped dramatically from 76% to 51% of students scoring proficient on the English I EOC. In 2008-2009, Garinger small schools increased performance, but still remained well below their initial year as well as below Garinger traditional in years leading up to small school conversion.

Figure 22. English 1 Proficiency over Time:
Garinger Small Schools vs. Garinger Traditional High School

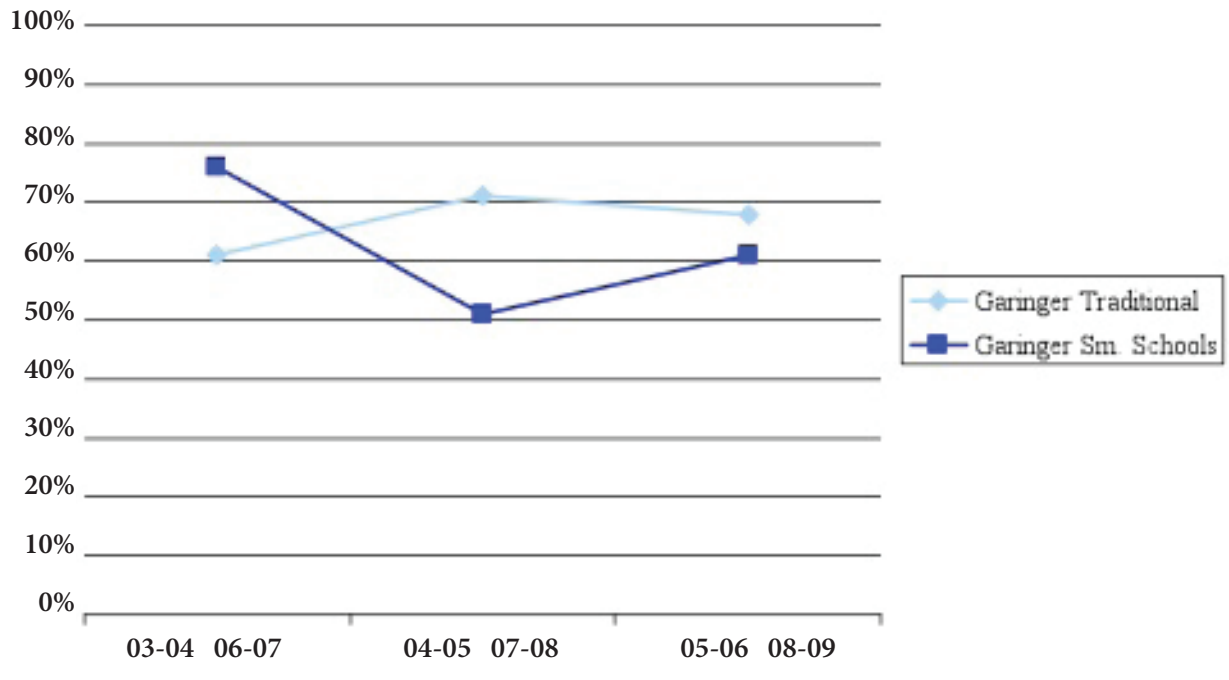


Figure 23 shows that Garinger traditional scored fairly low in their first year of taking the Civics and Economics EOC in 2005-2006 (33%). When Garinger small school students began taking the Civics and Economics EOC in 2007-2008, they performed better than Garinger traditional students had. Additionally, they significantly improved their Civics and Economics scores in 2008-2009, with 55% of students attaining proficiency on the Civics and Economics EOC.

Figure 23. Civics & Economics Proficiency over Time: Garinger Small Schools vs. Garinger Traditional High School

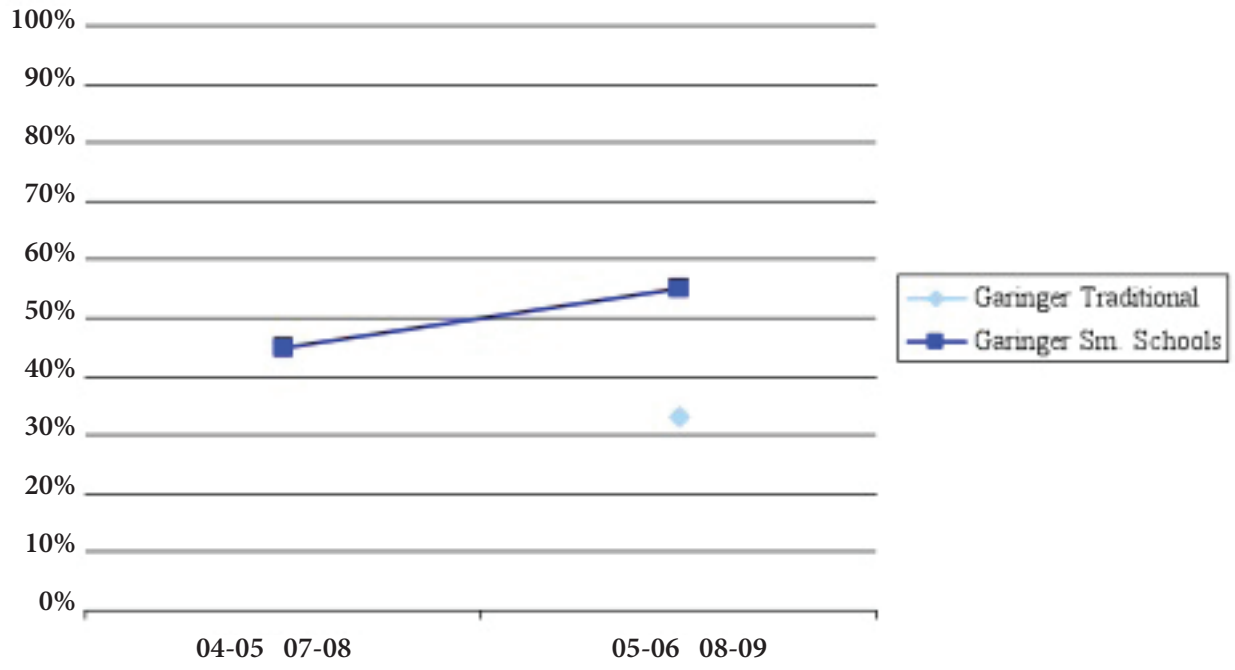
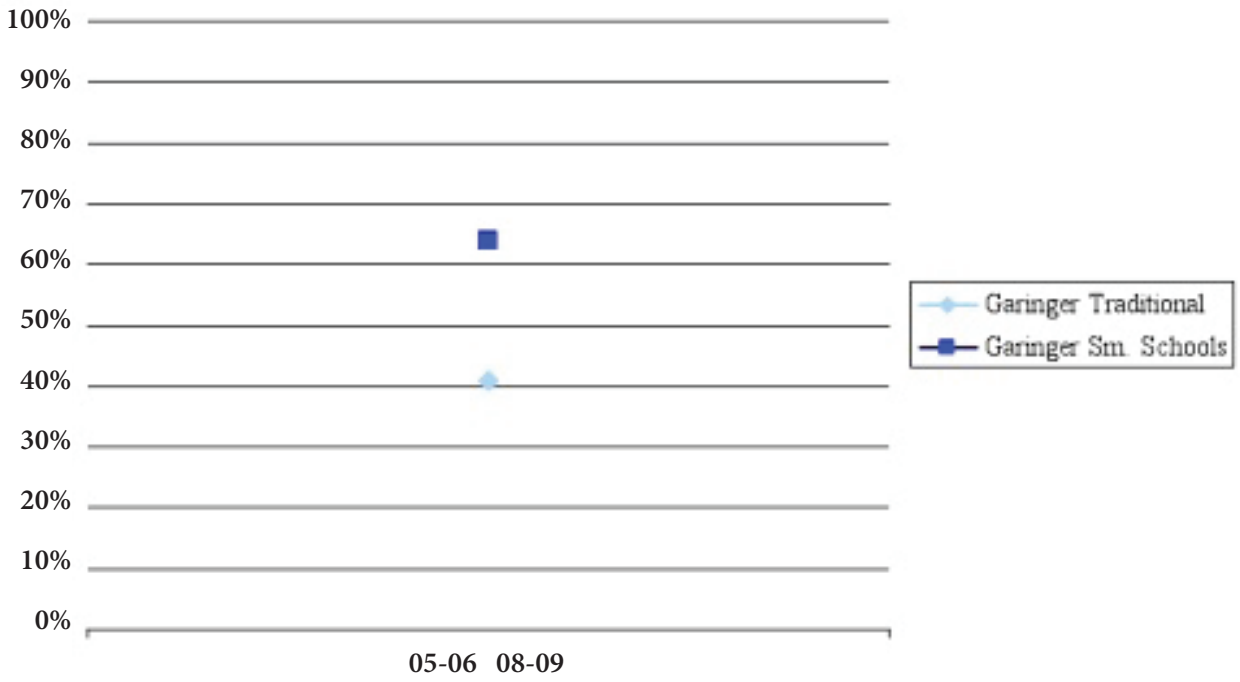


Figure 24 shows Garinger traditional had 41% of students scoring proficient on the U.S. History EOC in 2005-2006. Garinger small schools first took the U.S. History EOC in 2008-2009 and scored above Garinger traditional, with 64% of students scoring proficient.

Figure 24. U.S. History Proficiency over Time:
Garinger Small Schools vs. Garinger Traditional High School



Statistical group comparisons. Analysis of Variance (ANOVA) tests were used to assess differences in standardized EOC scores between each traditional high school prior to conversion and their small schools after conversion. First we compared all students that took a particular EOC in the former traditional school to all students that took a particular EOC in the small school, regardless of year. We then compared scores by year to examine changes over time. It should be noted that for Garinger Civics and Economics analyses, Garinger traditional scores include 2005-2006 while Garinger small school scores include 2007-2008 and 2008-2009. For Garinger U.S. History analyses, Garinger traditional scores include 2005-2006 students while Garinger small schools include 2008-2009 students and for Garinger Biology analyses, Garinger traditional scores include 2003-2004 through 2005-2006 while Garinger small schools include 2007-2008 and 2008-2009. Since state calculated growth scores were not available prior to 2006-2007, standardized EOC scores were the only outcome variable examined.

On the whole Olympic small school students, in the three years following conversion, performed the same or better than Olympic traditional students, from the three years prior to conversion. Olympic small school students scored significantly better than Olympic traditional students on Algebra I, F(1,

1684) = 77.81, p<.001, and U.S. History, F(1, 1563) = 28.61, p<.001. Effect size measures of these differences were small (.04 and .02 respectively). English I, Biology, and Civics and Economics test scores did not differ significantly before and after conversion. Garinger small school students, in the three years following conversion, scored better than Garinger traditional students, from the three years prior to conversion, in Algebra I, F(1, 1684) = 16.95, p<.001, Biology, F(1, 1886) = 56.71, p<.001, Civics and Economics, F(1, 1020) = 4.15, p<.05, and U.S. History, F(1, 607) = 11.76, p<.01. Again, effect size measures of these differences were small (.01, .03, .00, .02 respectively). Garinger students' English I test scores before and after the conversion did not differ significantly. Table 3 displays the means and standard deviations by school and EOC test and Table 4 displays the ANOVA results.

Table 3.
EOC Mean z-scores and Standard Deviations by School

EOC	School	M	SD	N
ALG1	Garinger Trad.	-0.80	0.81	955
	Garinger Small	-0.64	0.84	731
	Olympic Trad.	-0.90	0.73	639
	Olympic Small	-0.55	0.81	1047
ENG1	Garinger Trad.	-0.52	0.99	1454
	Garinger Small	-0.52	0.88	1088
	Olympic Trad.	-0.20	0.95	1347
	Olympic Small	-0.19	0.94	1480
BIOL	Garinger Trad.	-0.61	0.93	1251
	Garinger Small	-0.28	0.83	637
	Olympic Trad.	-0.26	0.98	1101
	Olympic Small	-0.22	0.97	1314
CECO	Garinger Trad.	-0.64	0.83	331
	Garinger Small	-0.52	0.84	691
	Olympic Trad.	-0.24	0.98	467
	Olympic Small	-0.16	0.96	1662
USHI	Garinger Trad.	-0.38	0.93	301
	Garinger Small	-0.13	0.86	308
	Olympic Trad.	-0.15	0.86	332
	Olympic Small	0.16	0.97	1233

Table 4.
ANOVA Results by School and EOC type

		df	Mean Square	F	Sig	Effect Size
ALG1	Garinger Trad. vs. Small	1	11.46	16.95	<.001	0.01
	Olympic Trad. vs. Small	1	47.15	77.81	<.001	0.04
ENG1	Garinger Trad. vs. Small	1	0.02	0.02	0.89	-
	Olympic Trad. vs. Small	1	0.03	0.03	0.85	-
BIOL	Garinger Trad. vs. Small	1	45.48	56.71	<.001	0.03
	Olympic Trad. vs. Small	1	1.34	1.4	0.24	-
CECO	Garinger Trad. vs. Small	1	2.93	4.15	0.04	0.00
	Olympic Trad. vs. Small	1	2.30	2.46	0.12	-
USHI	Garinger Trad. vs. Small	1	9.45	11.77	0	0.02
	Olympic Trad. vs. Small	1	25.71	28.61	<.001	0.02

When further examined by year, analyses show that Olympic small school students did not outperform Olympic Traditional school students across the board. In Algebra I, there was a significant effect for year, $F(5, 1680) = 40.99$, $p<.001$, with a medium effect size ($\eta^2=.11$). Olympic small school students' scores in 2006-2007 did not differ significantly from Olympic Traditional students in the previous three years. However significant improvements were made in 2007-2008 and 2008-2009. In English I, though statistically significant, $F(5, 2821) = 10.05$, $p<.001$, the effect size for year was small ($\eta^2=.02$). While students in 2008-2009 showed significant improvements in English I scores from previous years, they did not differ significantly from students in 2004-2005, prior to conversion. In Biology, $F(5, 2409) = 38.70$, $p<.001$, students in 2006-2007 performed significantly worse than students in all other years while students in 2008-2009 performed significantly better ($\eta^2=.07$). In Civics and Economics (which started testing in 2005-2006), though we found a statistically significant difference, $F(3, 2125) = 32.90$, $p<.001$, the effect size for year was small as well ($\eta^2=.04$) and only students in 2008-2009 performed significantly better than previous years. In U.S. History (which started testing in 2005-2006), though again we found a statistically significant difference, $F(3, 1561) = 35.48$, $p<.001$, the effect size for year was small ($\eta^2=.06$). U.S. History students in 2007-2008 did not differ significantly from students in 2005-2006. However students improved significantly in both 2006-2007 and 2008-2009.

Similarly, Garinger small school students did not outperform Garinger Traditional students across the board. In Algebra I, there was a statistically significant, $F(5, 1468) = 17.73$, $p<.001$, but small effect size for year ($\eta^2=.06$). While Garinger small school students in 2006-2007 and 2008-2009 outperformed Garinger Traditional students, scores for Garinger small school students in 2007-2008 did not differ significantly from all three years of Garinger Tradition students. In English I, though statistically significant, $F(5, 2260) = 9.56$, $p<.001$, the effect size for year was small ($\eta^2=.02$). Only students in 2006-2007 outperformed students from all other years. In Biology, $F(4, 1516) = 26.01$, $p<.001$, only students in 2008-2009 outperformed students from all other years ($\eta^2=.06$). In Civics and Economics (which started testing in 2005-2006), while statistically significant, $F(2, 1019) = 15.09$, $p<.001$, the effect size for year was very small ($\eta^2=.02$). Students in 2008-2009 outperformed students in 2005-2006 and

2007-2008 but student scores in these two years did not differ significantly from each other. In U.S. History (which started testing in 2005-2006), while statistically significant, $F(1, 607) = 11.76$, $p<.01$., the effect size for year was small ($\eta^2=.02$). Students in 2008-2009 outperformed students from 2005-2006. Table 5 displays the means and standard deviations by school, year, and EOC test, Table 6 displays the ANOVA results, and Table 7 displays Post Hoc test results.

Table 5.
EOC Mean z-scores and Standard Deviations by School and Year

EOC	School	Year	M	SD	N
ALGEBRA 1	Garinger Trad.	2003-2004	-0.83	0.80	244
		2004-2005	-0.87	0.72	256
		2005-2006	-0.82	0.80	243
	Garinger Small	2006-2007	-0.33	0.80	88
		2007-2008	-0.86	0.77	388
		2008-2009	-0.41	0.86	255
	Olympic Trad.	2003-2004	-0.90	0.73	221
		2004-2005	-0.87	0.76	159
		2005-2006	-0.91	0.70	259
	Olympic Small	2006-2007	-0.85	0.76	376
		2007-2008	-0.53	0.78	368
		2008-2009	-0.21	0.77	303
ENGLISH 1	Garinger Trad.	2003-2004	-0.63	1.09	404
		2004-2005	-0.45	0.95	402
		2005-2006	-0.46	0.95	372
	Garinger Small	2006-2007	-0.15	0.77	162
		2007-2008	-0.67	0.90	466
		2008-2009	-0.49	0.85	460
	Olympic Trad.	2003-2004	-0.29	0.96	419
		2004-2005	-0.06	0.91	420
		2005-2006	-0.24	0.97	508
	Olympic Small	2006-2007	-0.36	0.97	527
		2007-2008	-0.19	0.93	539
		2008-2009	0.01	0.86	414
BIOLOGY	Garinger Trad.	2003-2004	-0.67	0.94	355
		2004-2005	-0.75	0.93	446
		2005-2006	-0.49	0.83	182
		2006-2007	-	-	-
	Garinger Small	2007-2008	-0.41	0.73	317
		2008-2009	-0.15	0.89	320

EOC	School	Year	M	SD	N
	Olympic Trad.	2003-2004	-0.25	0.93	389
		2004-2005	-0.33	1.11	327
		2005-2006	-0.21	0.92	385
	Olympic Small	2006-2007	-0.65	0.98	418
		2007-2008	-0.23	0.82	485
		2008-2009	0.25	0.91	411
CIVICS AND ECONOMICS	Garinger Trad.	2003-2004	-	-	-
		2004-2005	-	-	-
		2005-2006	-0.64	0.83	331
		2006-2007	-	-	-
		2007-2008	-	-	-
	Garinger Small	2008-2009	-0.40	0.84	351
	Olympic Trad.	2003-2004	-	-	-
		2004-2005	-	-	-
		2005-2006	-0.24	0.98	467
	Olympic Small	2006-2007	-0.39	0.96	522
		2007-2008	-0.26	0.95	558
		2008-2009	0.14	0.91	582
U.S. HISTORY	Garinger Trad.	2003-2004	-	-	-
		2004-2005	-	-	-
		2005-2006	-0.38	0.93	301
		2006-2007	-	-	-
		2007-2008	-	-	-
	Garinger Small	2008-2009	-0.13	0.86	308
	Olympic Trad.	2003-2004	-	-	-
		2004-2005	-	-	-
		2005-2006	-0.15	0.86	332
	Olympic Small	2006-2007	0.16	0.99	392
		2007-2008	-0.12	0.98	410
		2008-2009	0.44	0.86	431

Table 6.
ANOVA Results by School, Year, and EOC type

EOC	School by Year	df	Mean Square	F	Sig	Effect Size
ALGEBRA 1	Garinger: School Year	5	11.08	17.73	<.001	0.06
	Olympic: School Year	5	23.21	40.99	<.001	0.11
ENGLISH 1	Garinger: School Year	5	8.41	9.56	<.001	0.02
	Olympic: School Year	5	8.81	10.05	<.001	0.02
BIOLOGY	Garinger: School Year	4	20.05	26.01	<.001	0.06
	Olympic: School Year	5	34.18	38.7	<.001	0.07
CIVICS AND ECONOMICS	Garinger: School Year	2	10.52	15.09	<.001	0.02
	Olympic: School Year	3	29.44	32.9	<.001	0.04
U.S. HISTORY	Garinger: School Year	1	9.45	11.77	<.001	0.02
	Olympic: School Year	3	30.44	35.48	<.001	0.06

Table 7.
Post-Hoc Sub-set Analyses by School and Year

			Subset			
EOC	**School**	**School Year**	**1**	**2**	**3**	**4**
ALGEBRA 1	Garinger	2004-2005	-0.87			
		2007-2008	-0.86			
		2003-2004	-0.83			
		2005-2006	-0.82			
		2008-2009		-0.41		
		2006-2007		-0.33		
	Olympic	2005-2006	-0.91			
		2003-2004	-0.9			
		2004-2005	-0.87			
		2006-2007	-0.85			
		2007-2008		-0.53		
		2008-2009			-0.21	
ENGLISH 1	Garinger	2007-2008	-0.67			
		2003-2004	-0.63	-0.63		
		2008-2009	-0.49	-0.49		
		2005-2006		-0.46		
		2004-2005		-0.45		
		2006-2007			-0.15	

			Subset			
EOC	School	School Year	1	2	3	4
		2003-2004	-0.29			
		2005-2006	-0.24	-0.24		
		2007-2008	-0.19	-0.19		
		2004-2005		-0.06	-0.06	
		2008-2009			0.01	
BIOLOGY	Garinger	2004-2005	-0.75			
		2003-2004	-0.67	-0.67		
		2005-2006		-0.49	-0.49	
		2007-2008			-0.41	
		2008-2009				-0.15
	Olympic	2006-2007	-0.65			
		2004-2005		-0.33		
		2003-2004		-0.25		
		2007-2008		-0.23		
		2005-2006		-0.21		
		2008-2009			0.25	
CIVCS AND ECONOMICS	Garinger	2007-2008	-0.65			
		2005-2006	-0.64			
		2008-2009		-0.4		
	Olympic	2006-2007	-0.39			
		2007-2008	-0.26	-0.26		
		2005-2006		-0.24		
		2008-2009			0.14	
U.S. HISTORY	Garinger	2005-2006	-0.38			
		2008-2009		-0.13		
	Olympic	2005-2006	-0.15			
		2007-2008	-0.12			
		2006-2007		0.16		
		2008-2009			0.44	

Tier 3: Olympic Small School Composite & Garinger Small School Composite Comparison

Descriptive statistics.

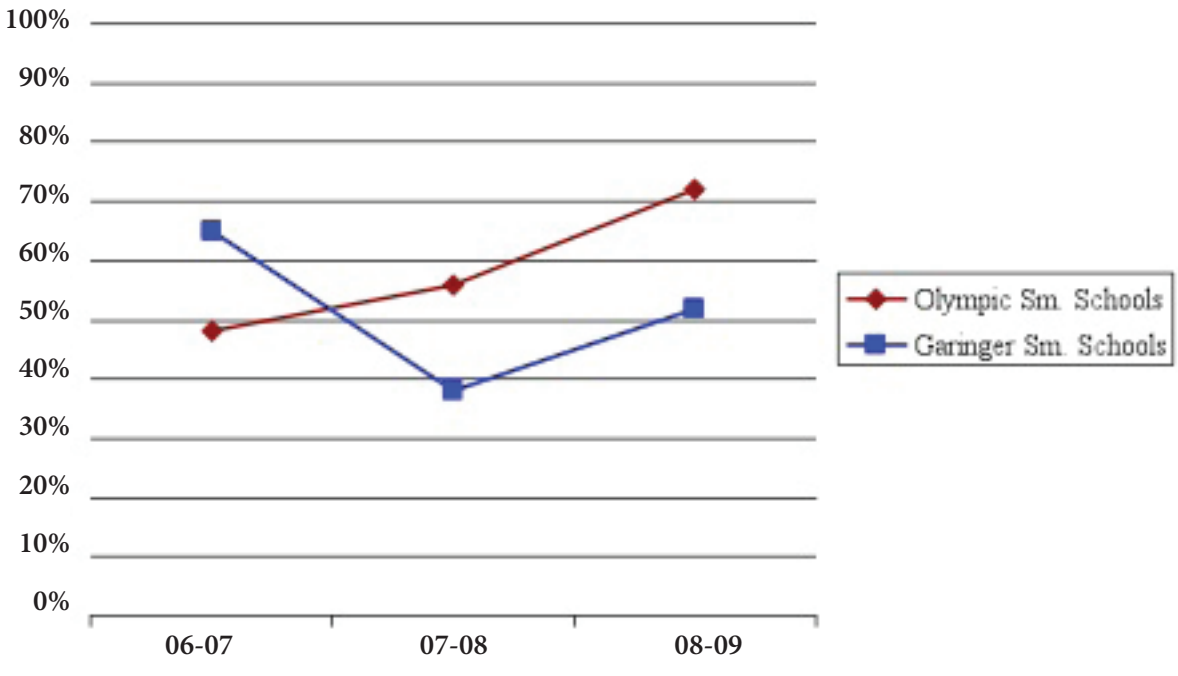
Demographics by comparison. Appendix C shows how Garinger small schools have a greater proportion of 9th graders than Olympic small schools (46% vs. 31). Additionally, Garinger small schools do not have any seniors for the 2008-2009 school year. For comparisons of race/ethnicity, Garinger small schools have a higher percentage of black students (60.7% vs. 43.0), and Hispanic students (26.5% vs. 18.8). Olympic small schools are composed of a higher percentage of white students (27.9% vs. 5.2). In terms of gender, Olympic small schools are slightly more female (50.1% vs. 49.9), while Garinger small schools are slightly more male (49.9% vs. 51.8). Garinger small schools have a much higher percentage of students with ED status (79.1% vs. 46.0), indicating a population with families of lower socio-economic status. While EC status is similar between Olympic small schools and Garinger small schools (~8.0%), LEP status differs. Garinger small schools have a higher percentage of students classified as LEP (24.6% vs. 13.0), when compared to Olympic small schools.

Academic achievement by comparisons. Olympic small schools had a slightly higher percentage of students enrolled in advanced placement courses (15.6% vs. 11.5%). This difference is most likely due to Garinger small schools lacking a senior class in 2008-2009. Results for 2009-2010 will most likely yield a more appropriate comparison, since this will be Garinger's first year with a senior class. A higher percentage of Olympic small school students (69.5%) than Garinger small school students (50.1%) were proficient on 8th grade math (z-score=2/5 st. dev. higher). Also, a higher percentage of Olympic small school students (78.7%) than Garinger small school students (60.7%) were proficient on 8th grade reading (z-score=½ st. dev. higher) scores.

Group comparisons: 2006-2007 to 2008-2009 EOC scores. At this tier, we began by comparing overall EOC proficiency between an Olympic small school composite and a Garinger small school composite from 2006-2009. We then examined differences in standardized EOC scores between small school sites using statistical adjustments to correct for demographic differences between the schools (i.e., race, ED status, EC status, LEP status, 8th grade reading and/or math scores, unexcused absences). For each EOC (Algebra I, Biology, English I, Civics and Economics, and U.S. History) we examined change in adjusted score by year, school (Garinger small school composite vs. Olympic small school composite), and the interaction between school and year.

Overall EOC performance: Olympic small schools vs. Garinger small schools. Figure 25 shows the proficiency percentage on the five gateway EOCs at each small school from 2006-2007 to 2008-2009. The percent of Olympic small school students who were proficient on the 5 gateway EOCs has risen every year since 2006-2007, while Garinger small schools' student proficiency had dramatically decreased from 2006-2007 to 2007-2008 (65% to 35%) and then rose significantly in 2008-2009 (to 52%). When comparing the proficiency percentages on the 5 gateway EOCs over the last two years, Olympic small school students have outperformed Garinger small school students in both 2007-2008 (56% - Olympic vs. 38% - Garinger) and 2008-2009 (72% - Olympic vs. 52% - Garinger).

Figure 25. Proficiency on the 5 Gateway EOCs over Time: Olympic and Garinger Small Schools



Individual EOC performance: Olympic small school vs. Garinger small school. Figure 26 illustrates Olympic small schools' steady increase in Algebra I proficiency since their school conversion. Garinger small schools showed a dramatic decline in 2007-2008 as compared to their initial year (53%to 30%) and a dramatic increase in 2008-2009 (30% to 55%), rebounding to their 2006-2007 performance scores. When comparing the two schools, more Olympic students were proficient in Algebra I than Garinger students over the past two consecutive years (2007-2008: 46% vs. 30%; 2008-2009: 64% vs. 55%).

Figure 26. Algebra I Proficiency over Time: Olympic and Garinger Small Schools

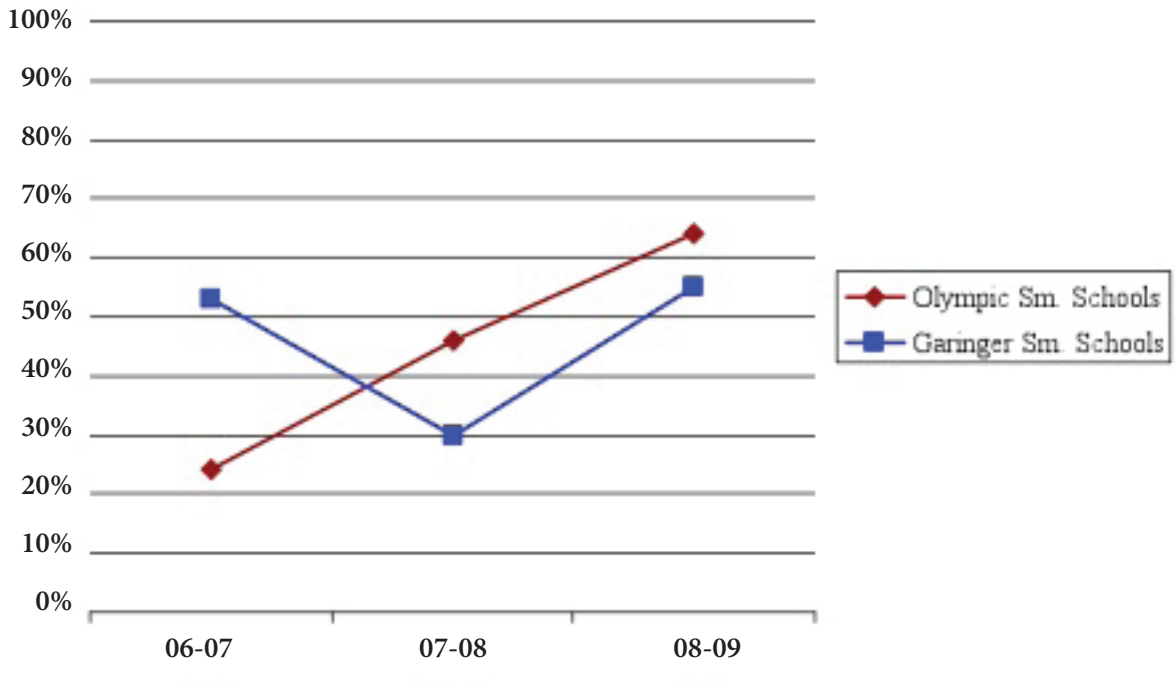
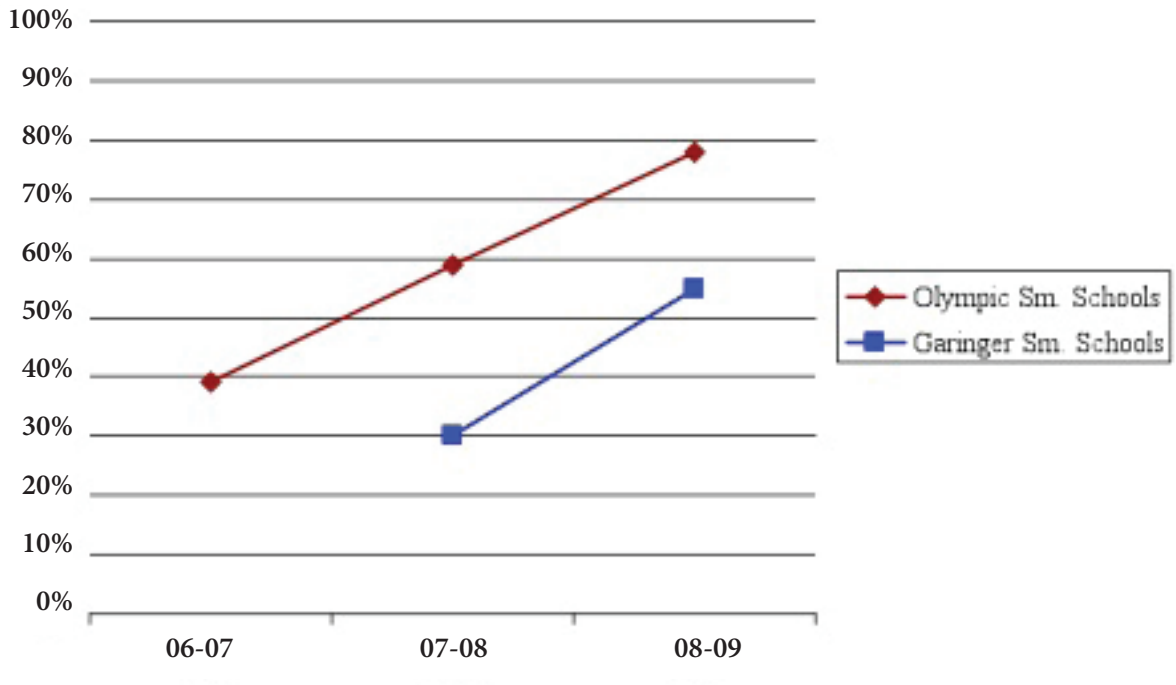


Figure 27 shows that both Olympic and Garinger small school Biology students increasingly improved performance over time. Additionally, in the two years that Garinger students had taken Biology EOCs, Olympic small school students outperformed them by a fair margin (by 29% in 2007-2008 and by 23% in 2008-2009).

Figure 27. Biology Proficiency Over Time: Olympic and Garinger Small Schools



Although Figure 28 shows that Garinger small school English I students performed better than their Olympic small school counterparts in 2006-2007 (76% vs. 62%), this pattern reversed with Olympic small school students performing better on English I EOCs in following years. Garinger small school students experienced a significant drop in scores from 2006-2007 to 2007-2008 (76% to 51%), with a slight increase in scores in 2008-2009 (51% to 61%), while Olympic small school students steadily increased over these three years (62%, 69%, 80%). In 2008-2009, Olympic small school students outperformed Garinger small school students in English I EOCs by 19%.

Figure 28. English I Proficiency over Time: Olympic and Garinger Small Schools

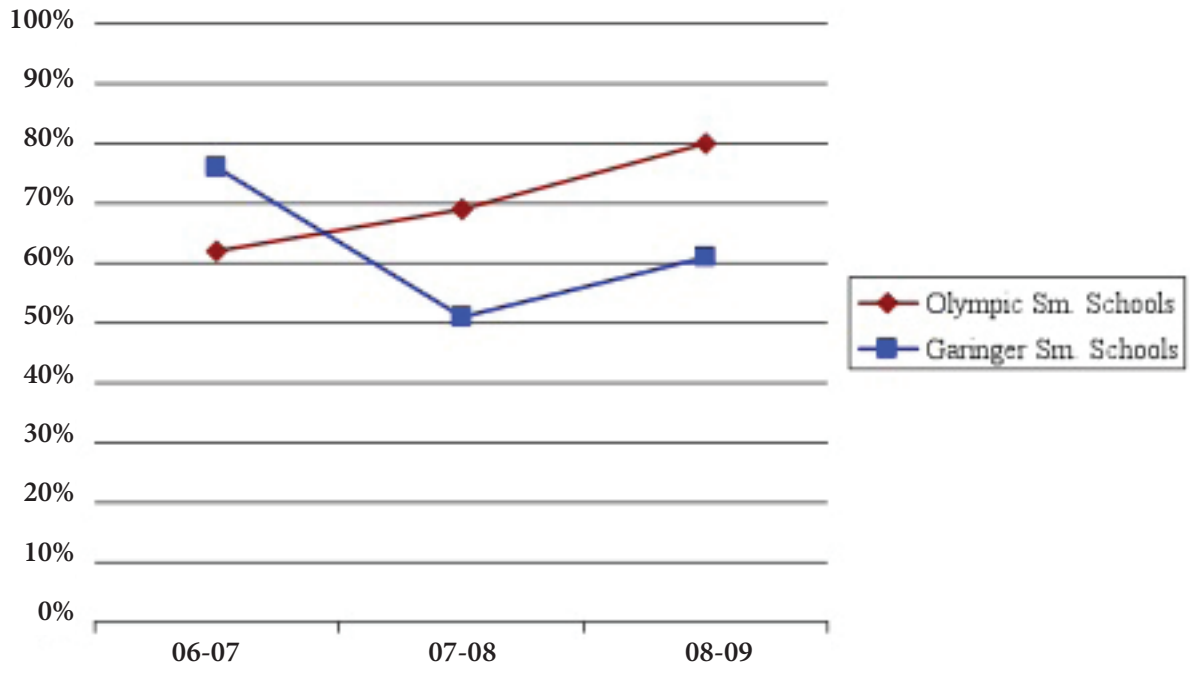
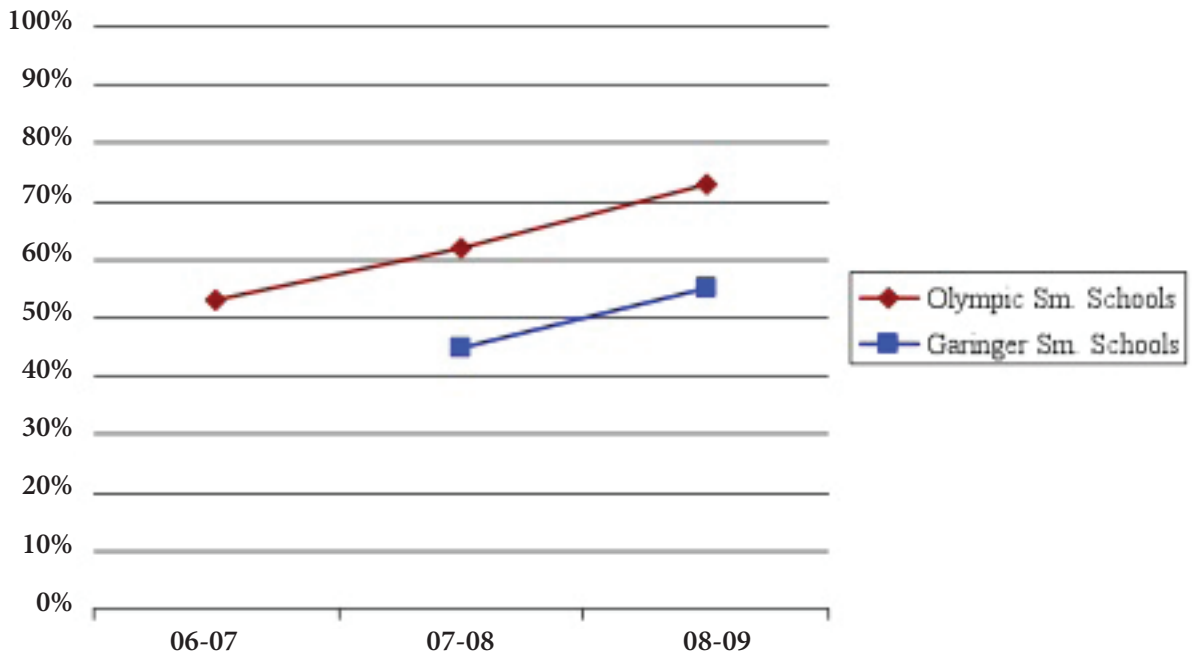


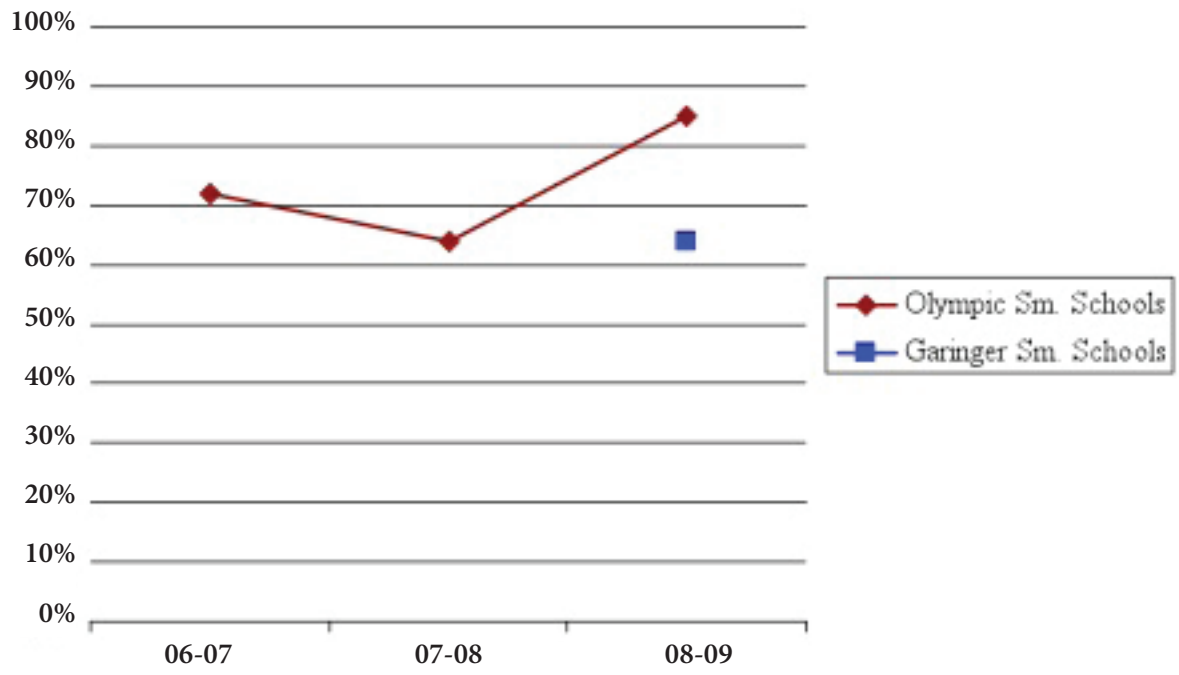
Figure 29 shows that, in Civics and Economics, both Olympic and Garinger small school students improved performance over time. Additionally, in the two years that Garinger students had taken Civics and Economics EOCs, Olympic small school students outperformed them by a fair margin (by 17% in 2007-2008 and by 18% in 2008-2009).

Figure 29. Civics & Economics Proficiency over Time: Olympic and Garinger Small Schools



Although Olympic small schools showed a decline in U.S. History proficiency from 2006-2007 to 2007-2008 (72% to 64%), students' scores dramatically rose in 2008-2009 and even well surpassed their 2006-2007 performance scores (85%). Garinger small school students only took U.S. History EOCs in 2008-2009. When compared to Olympic during this same year they showed significantly lower performance scores (lower by 21%).

Figure 30. U.S. History Proficiency over Time: Olympic and Garinger Small Schools

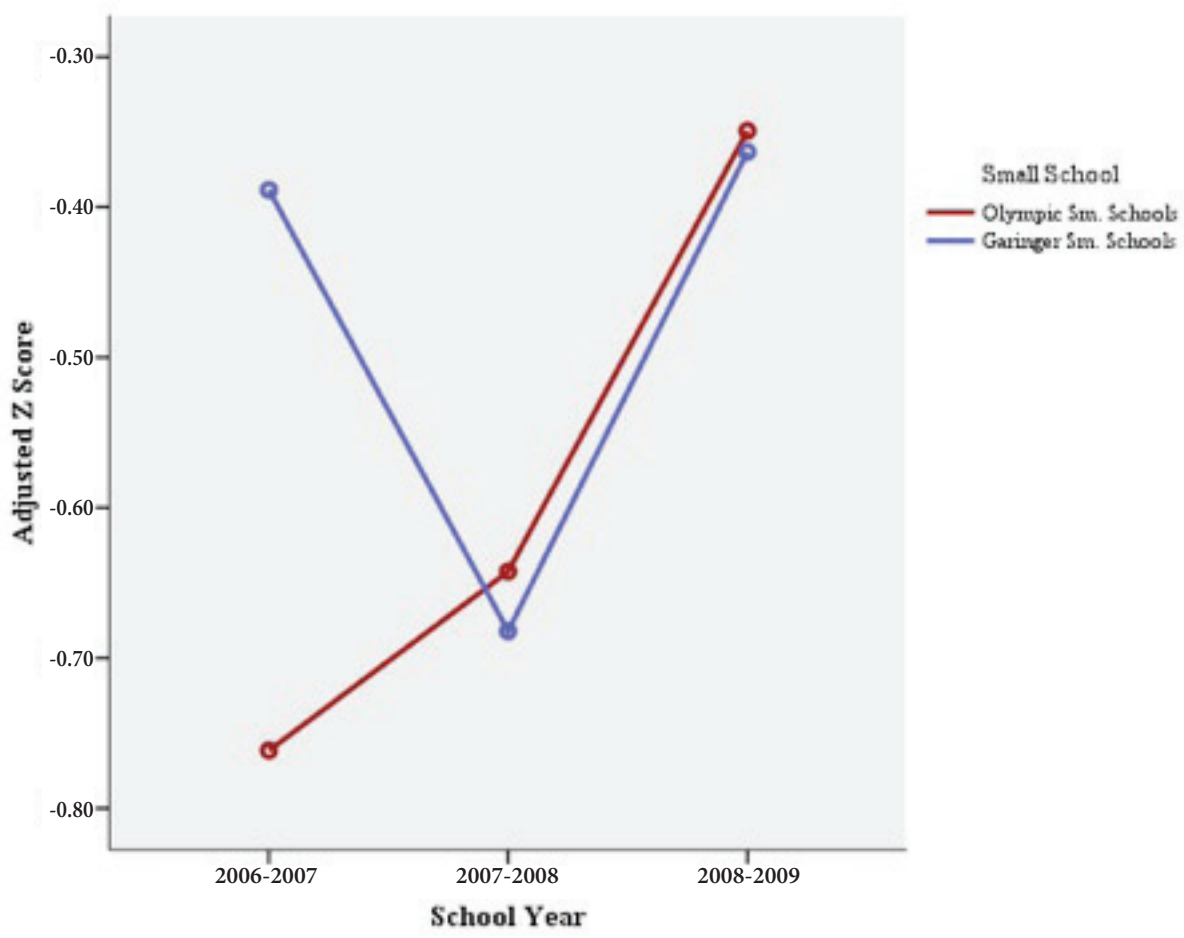


Statistical group comparisons. Analysis of Covariance (ANCOVA) tests were used to assess the effect of school (Garinger small schools vs. Olympic small schools) on student EOC scores. Group (Olympic small school composite vs. Garinger small school composite) and Year (2006-2007, 2007-2008, 2008-2009) were entered into the model as fixed effects. The interaction between School and Year was also examined. Because of the difference in student populations at the two schools, ED status, EC status, LEP status, race, gender, unexcused absences, and 8th grade Reading and/or Math EOG scores were included as covariates and adjusted means based on these covariates are reported. An eta squared (η^2) was calculated as an estimate of the size of the effect of each variable.

Year had a significant effect, $F(2, 1419) = 35.77$, $p<.001$, on Algebra I standardized scores with students across both Olympic and Garinger scoring highest (Adj. M = -.36) in 2008-2009 ($\eta^2=.05$). Garinger's adjusted Algebra I scores were significantly better, $F(1, 1419) = 9.07$, $p<.01$, than Olympic's overall (Garinger Adj. M= -.48, Olympic Adj. M= -.58), but the effect size was small ($\eta^2=.01$). As illustrated

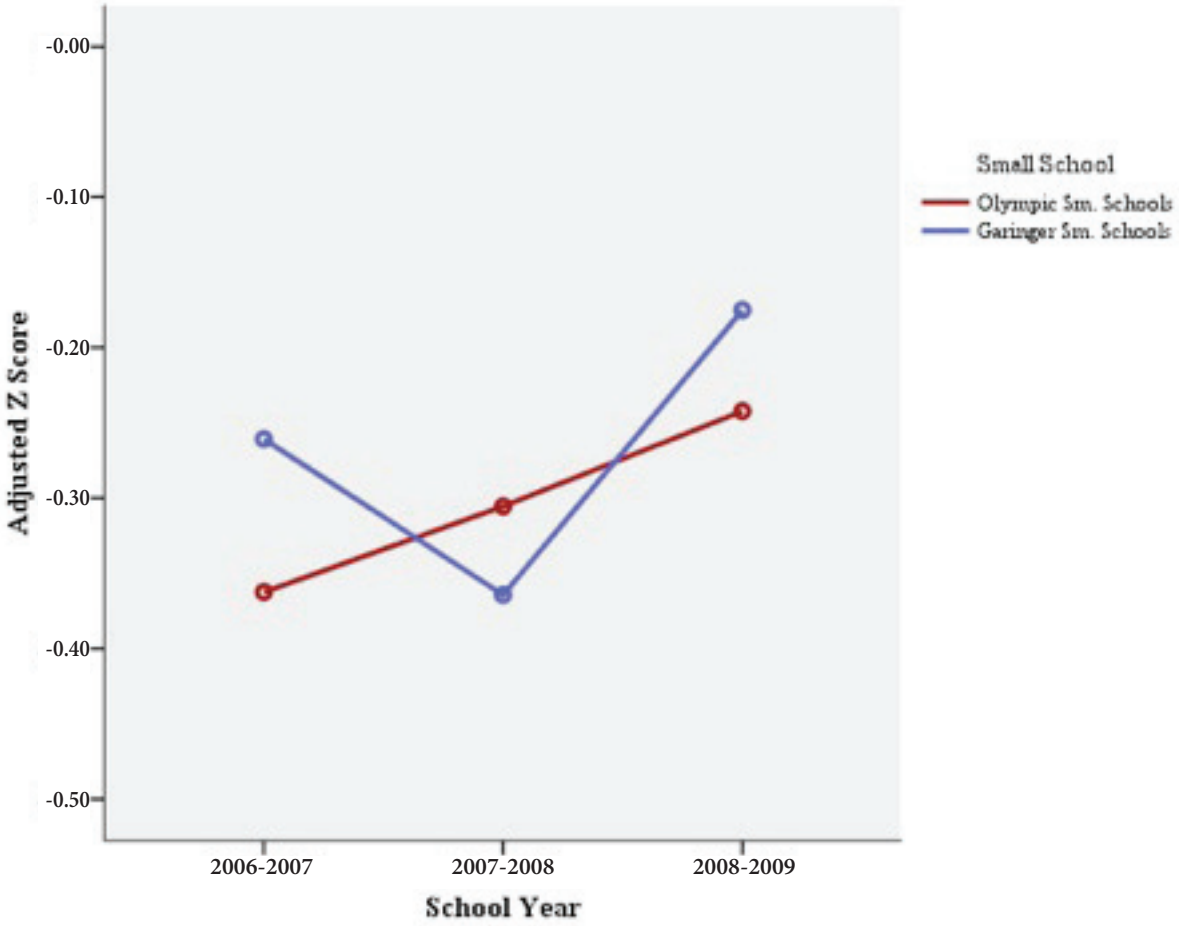
by Figure 31, there was a significant Year x School interaction, $F(2, 1419) = 12.35$, $p<.001$, in which Garinger students well outperformed Olympic students in 2006-2007 and Olympic students marginally outperformed Garinger students in 2007-2008 and 2008-2009 ($\eta^2=.02$).

Figure 31.
Adjusted Algebra I Standardized Scores by School and Year.



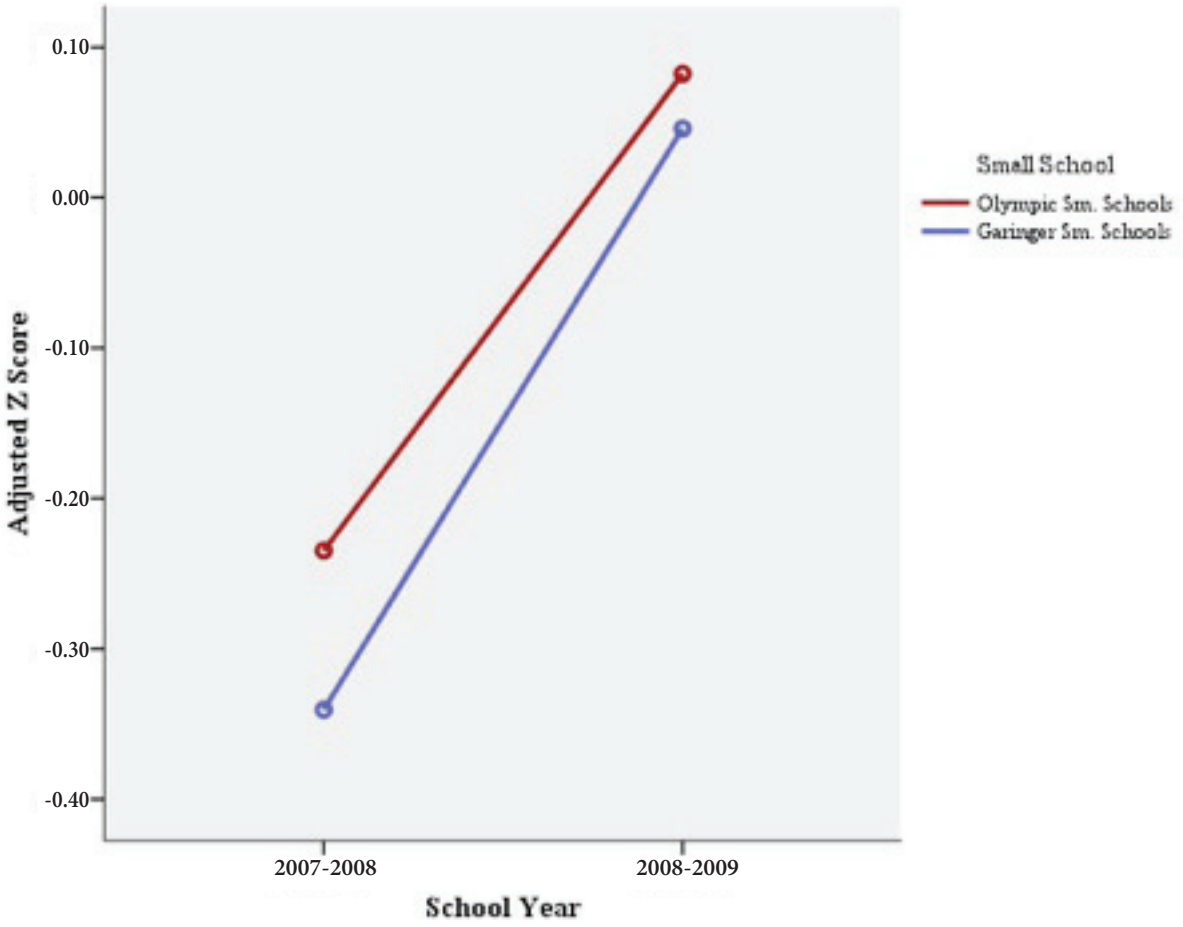
For English I, figure 32 shows that Year had a significant, $F(2, 2174) = 11.49$, $p<.001$, but very small effect ($\eta^2=.01$). Students across both schools scored higher in 2008-2009 than in the previous 2 years. There was not a significant difference between schools on English I adjusted scores, $F(1,2174) = 1.93$, $p=.16$, but there was a small interaction, $F(2, 2174) = 4.18$, $p<.05$, between Year and School ($\eta^2=.01$). As Figure 32 illustrates, Garinger students scored higher (-0.26) than Olympic students (-0.36) in 2006-2007, scored lower (-0.36) than Olympic students (-0.31) in 2007-2008, and then again scored higher (-0.18) than Olympic students (-0.24) in 2008-2009.

Figure 32.
Adjusted English I Standardized Scores by School and Year.



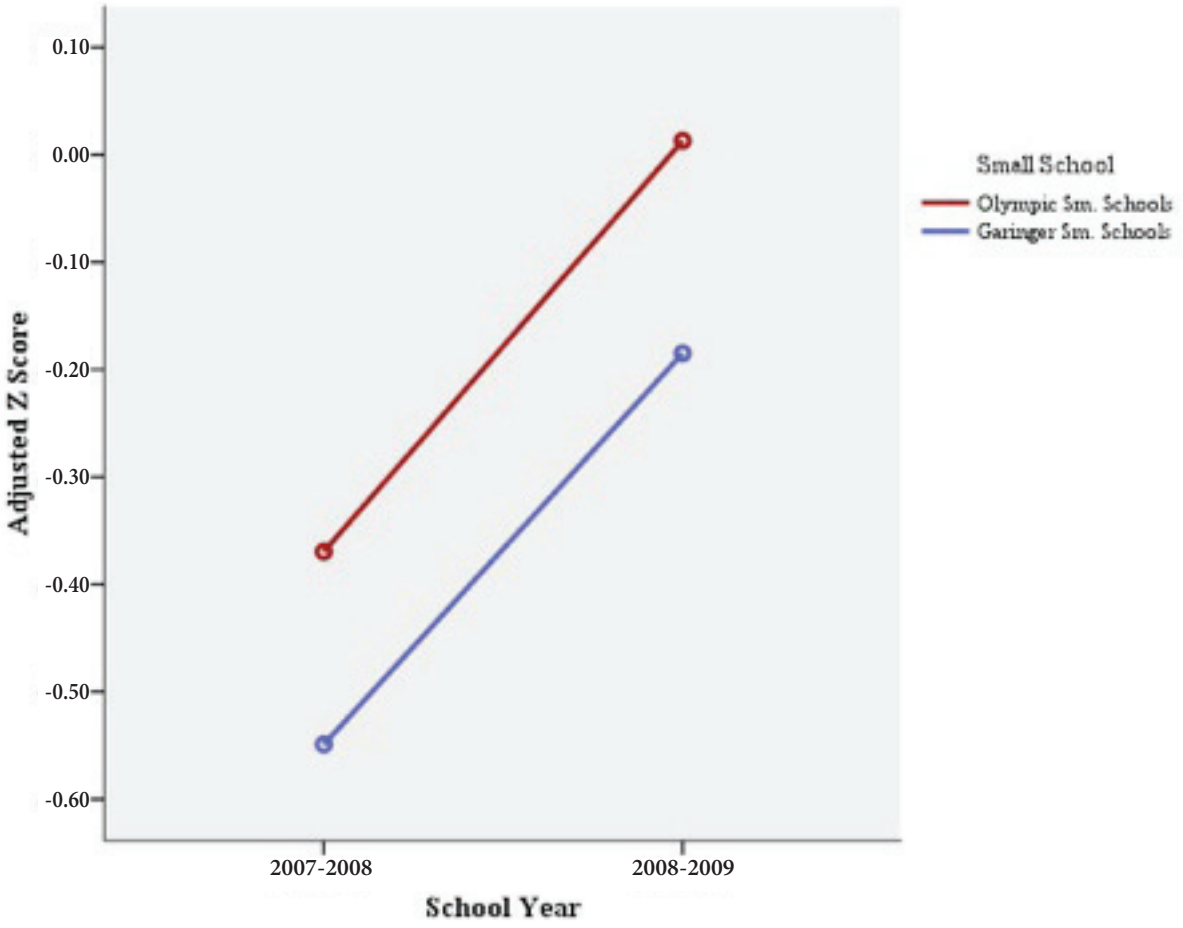
Only the 2007-2008 and 2008-2009 school years were compared for Biology because Garinger small school students did not take a Biology EOC in 2006-2007. There was a significant effect, $F(1, 1215) = 96.18$, $p<.001$, of Year ($\eta^2=.07$) on Biology EOC scores. Students across both schools performed better in 2008-2009 than in 2007-2008. There were not significant effects for School, $F(1, 1215) = 3.55$, $p=.06$, or a School x Year interaction, $F(1, 1215) = .93$, $p=.34$. Figure 33 shows the adjusted z scores for Garinger and Olympic from 2007-2008 to 2008-2009. Though Olympic students scored marginally higher than Garinger students over both years, this difference was not statistically significant.

Figure 33.
Adjusted Biology Standardized Scores by School and Year.



Only the 2007-2008 and 2008-2009 school years were compared for Civics and Economics because Garinger small school students did not take a Civics and Economics EOC in 2006-2007. There was a significant effect, $F(1, 1416) = 132.02$, $p<.001$ of Year ($\eta^2=.09$) on Civics and Economics EOC scores. Students across both schools performed better in 2008-2009 than in 2007-2008. There was also a significant but small effect, $F(1, 1416) = 29.85$, $p<.001$, for school ($\eta^2=.02$) in which Olympic students outperformed Garinger students. There was not a School x Year interaction, $F(1,1416) = .08$, $p = .78$. Figure 34 shows the adjusted z-scores for Garinger and Olympic from 2007-2008 to 2008-2009.

Figure 34.
Adjusted Civics and Economics Standardized Scores by School and Year.



Only the 2008-2009 school year was compared for U.S. History because Garinger small school students did not take a U.S. History EOC until 2008-2009. Because only 1 year of data was available neither Year nor the interaction between Year and School were examined for U.S. History. There was a significant effect ($\eta^2=.06$) for school, $F(1,584) = 33.84$, $p<.001$, in which Olympic students (Adj. M = .32) outperformed Garinger students (Adj. M = -.03).

Tier 4: Individual Small Schools Comparisons

Descriptive statistics.

Demographics by comparison. Olympic small schools were similar to each other in terms of the proportions of students for each grade level (See Appendix C). In terms of racial composition of the Olympic small schools, International Business had the highest percentage of black students (62.0% vs. 43.0; 39.1; 25.9; 47.4), while METS had the highest percentage of white students (48.2%) followed by Renaissance (36.2% vs. 22.2; 18.0; 12.5). Hispanic students tended to be clustered in the School of International Studies (21.4%) and International Business (22.0%), while being the least representative in METS (13.5%). Asian students tended to be in Biotech (13.8%), METS (9.1%), and International Studies (9.7%), while they were not very representative in International Business (2.4%) and Renaissance (2.9%). Gender varied considerably between the Olympic small schools. While Biotech and Renaissance were over 60% female, METS was approximately 70% male. ED status varied by Olympic small schools as well, with International Business having the highest percentage of economically disadvantaged students (56.4%) and METS having the lowest (32.1%). EC status was similar between Olympic small schools (8.7%, 7.6; 6.7; 7.4; 8.6). LEP status was highest at International Studies (18.9%), while lowest at Renaissance (8.2%).

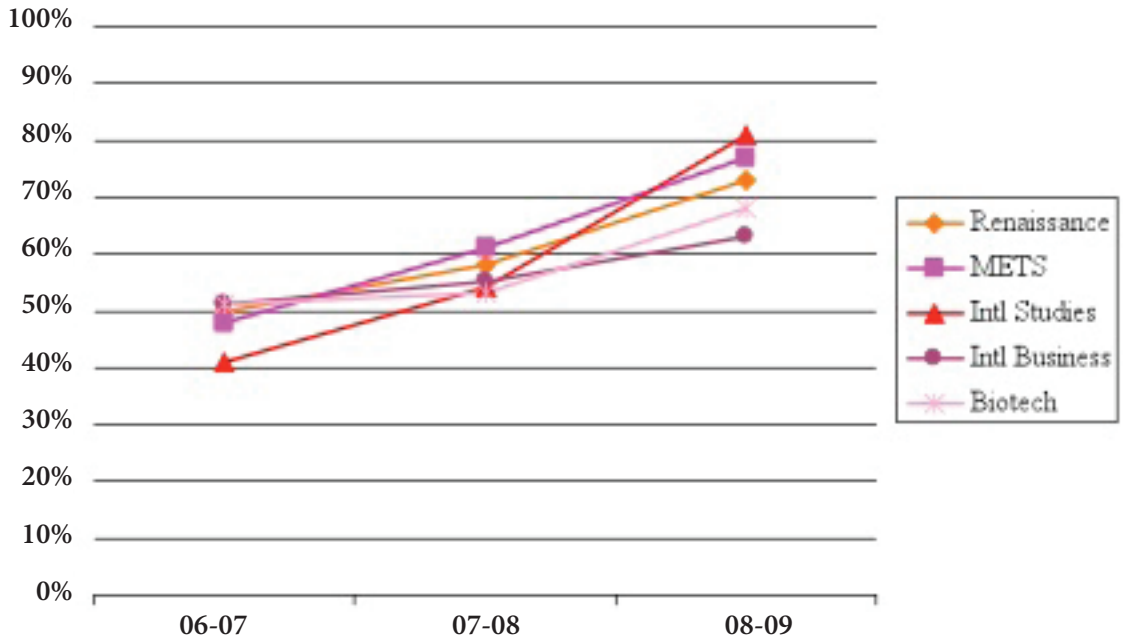
The majority of Garinger small schools had a high percentage of freshmen, with the exception of New Tech (35.1% vs. 45.3; 56.2; 45.1; 49.0). Additionally, there were no seniors at any of the Garinger small schools. For racial composition of the Garinger small schools, Business and Finance had the highest percentage of black students (71.4%) followed by LPS (66.5 % vs. 60.4; 55.3; 49.4). While New Tech had the highest percentage of white students (12.1% vs. 3.8; 2.6; 3.3; 3.3), International Studies had a significantly higher proportion of Hispanic students than other Garinger small schools (40.7% vs. 27.2; 24.5; 19.0; 22.7). The gender distribution was similar between Garinger small schools, with the exception of New Tech which was 67% male. Most Garinger small schools had percentages exceeding 80% for students with ED status, with the exception of New Tech (71.6%). While Garinger small schools had similar percentages of students with EC status, LPS had slightly more (10.3% vs. 7.9; 9.5; 8.2; 4.1). International Studies had the highest percentage of LEP students (32%), while Business and Finance had the lowest (18.3%)

Academic achievement by comparisons. At the Olympic small schools, students at METS performed significantly better on the 8th grade math EOG (84.2% proficient, z=.51), while students at International Studies performed worse than their neighboring small schools (59.3%, z=-.24 vs. 68.5; 68.4; 61.9). Additionally, students at METS performed significantly better on the 8th grade reading EOG (85.9% proficient, z=.20), while the students at International Studies performed worse when compared to other Olympic small schools (72.0% proficient, z=-.29, vs. 78.2; 79.3; 75.4). At the Garinger small schools, New Tech students performed slightly better on the 8th grade math EOG (57.3% proficient, z=-.17), while students at LPS performed worse than their neighboring small schools (40.0% proficient, z=-.52 vs. 51.1; 46.5; 52.9). Additionally, students at New Tech performed better on the 8th grade reading EOG (68.7% proficient, z=-.33), while the students at LPS performed slightly worse when compared to other Garinger small schools (53.7% proficient, z=-.70, vs. 58.3; 65.1; 55.4).

Group comparisons: EOC scores by school year and specific small school. At this tier, we began by examining differences in overall EOC proficiency between the five small schools at Garinger and the five smalls schools at Olympic. We then examined changes in standardized EOC scores within small schools using statistical adjustments to correct for demographic differences between the schools (i.e., Race, ED status, EC status, LEP status, 8th grade reading and/or math scores, unexcused absences). For each EOC (Algebra I, Biology, English I, Civics and Economics, and U.S. History) we examined change in adjusted scores by year, specific small school, and the interaction between small schools and year.

Overall EOC performance: individual small schools at Olympic and Garinger. Olympic small schools have shown a steady increase in proficiency on the 5 gateway EOCs over their first three years following conversion (Figure 35). International Studies, once the lowest performing small school at Olympic, has made the most drastic improvement over time, going from 41% proficiency in 2006-2007 to 81% proficiency in 2008-2009. In 2008-2009, a close second to International Studies was METS with 77% proficiency in the 5 gateway EOCs, while Renaissance, Biotech, and International Business showed steady progress from previous years but still performed lower (73%, 68%, 63% respectively).

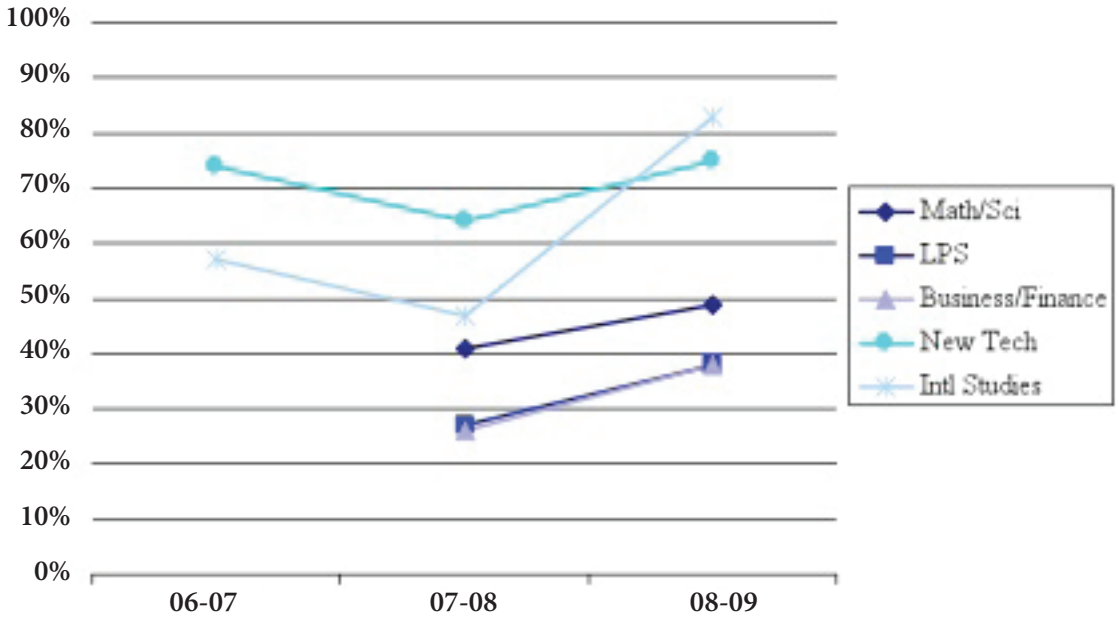
Figure 35. Proficiency on the 5 Gateway EOCs over Time: Individual Olympic Small Schools



Although there was a dip in performance for 2007-2008, New Tech and International Studies have consistently outperformed other Garinger small schools in the 5 gateway EOCs since they converted to small schools. In 2007-2008, International Studies was performing just slightly better than Math and

Science, LPS, and Business and Finance but made their most improvement in 2008-2009, even surpassing New Tech to become the Garinger small school with the highest overall EOC performance, at 83% proficient. There has been great variation in EOC proficiency between Garinger small schools since Math and Science, Business and Finance, and LPS were added in 2007-2008, widening to a range of 45% in 2008-2009. Although these three schools have made progress in 2008-2009, they still perform lower than New Tech and International Studies in regard to EOC proficiency (83% and 75% vs. 49%, 38%, and 38% respectively).

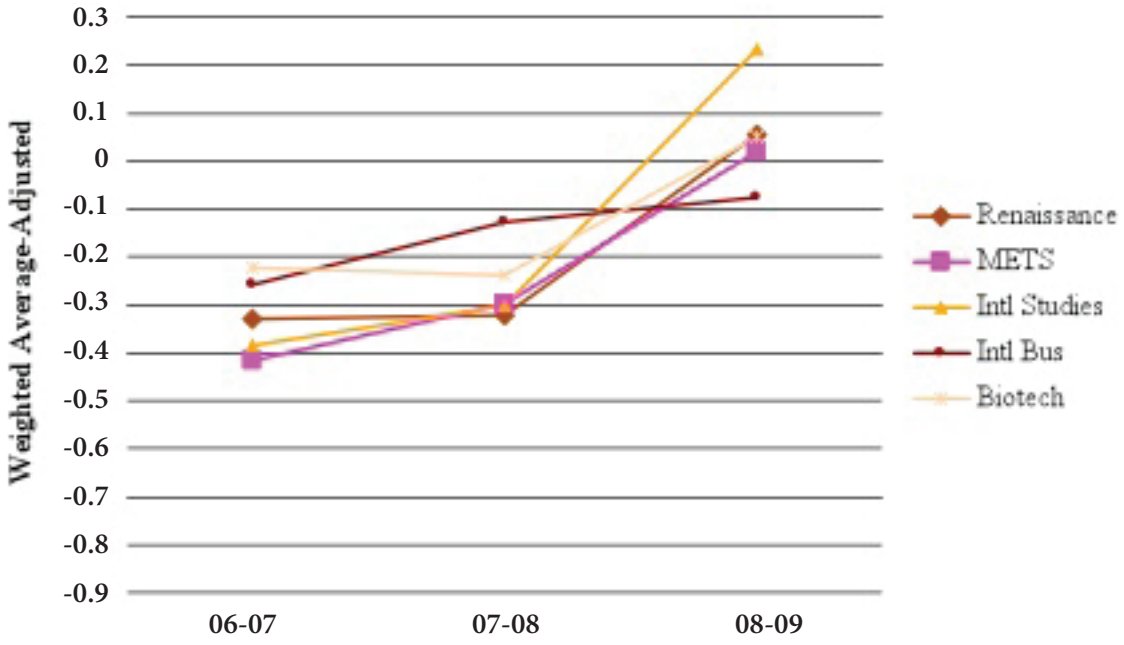
Figure 36. Proficiency on the 5 Gateway EOCs over Time: Individual Garinger Small Schools



Overall Weighted Average of EOC Performance: individual small schools at Olympic and Garinger small schools In order to determine whether there was variation in academic achievement among the small schools, a weighted average was calculated across five EOCs within each school. More specifically, for each EOC within each school, an adjusted mean was created using relevant variables as covariates. These adjusted means were weighted by the number of students and averaged across each EOC. For Olympic, three years were included in the comparisons (2006-2007, 2007-2008, & 2008-2009). For Garinger, weighted averages were compared between 2007-2008 and 2008-2009.

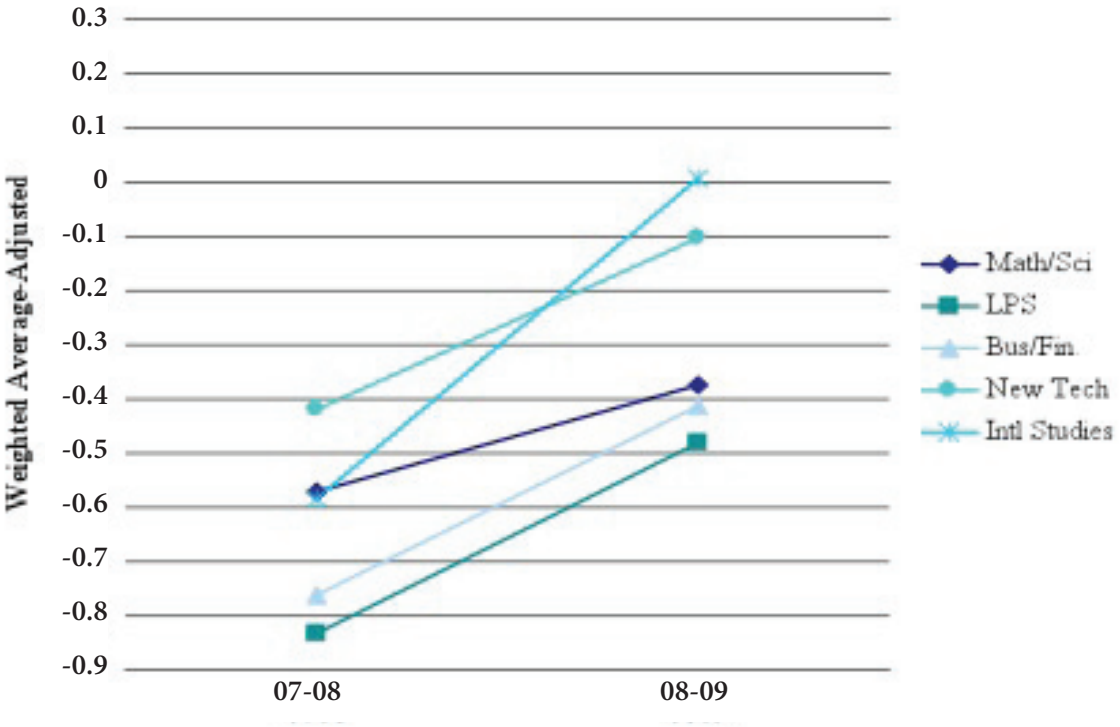
Weighted Average of EOC Performance: individual small schools at Olympic small schools. In looking at the adjusted weighted averages of EOC performance, there were variations between Olympic small schools. Although most Olympic small schools made yearly improvements from the 2006-2007 school year to the 2008-2009 school year, International Studies made the most drastic increase in EOC performance from 2007-2008 to 2008-2009. Renaissance and METS also made noteworthy improvement between these years as well.

Figure 37. Weighted Average of EOC Performance over Time: Individual Olympic Small Schools



Weighted Average of EOC Performance: individual small schools at Garinger small schools. In comparison to Olympic small schools, there was even more variation in EOC performance between Garinger small schools. International Studies made the steepest increase in EOC performance between 2007-2008 and 2008-2009. New Technology had notable EOC performance in 2007-2008, as well as an increase in performance in 2008-2009. While Business and Finance and LPS remained the lowest performing small schools at Garinger, they made increases in EOC performance in 2008-2009.

Figure 38. Weighted Average of EOC Performance over Time: Individual Olympic Small Schools



DISCUSSION

On the whole students at Garinger and Olympic small schools performed the same or better on End of Course exams than students did when each school was a traditional high school. However different levels of analyses yielded conflicting findings. As noted previously, finding closely matched comparison high schools for Tier 1 analyses was challenging, however, using the best comparisons available, when compared to a matched comparison group of similar students from similar schools in 2008-2009, findings were mixed. Olympic small school students performed marginally worse than comparison students in Algebra I and English I and also had slightly lower growth scores for these two EOCs. But Olympic small school students performed marginally better in Biology and U.S. History and also had slightly higher growth scores in Biology and Civics and Economics. Growth scores for U.S. History were significantly higher for Olympic small school students than matched comparison students. Similarly, Garinger small school students performed marginally worse than comparison students in Algebra I and Civics and Economics and also had slightly lower growth scores for these two EOCs. Garinger students performed marginally better than comparison students in Biology and had slightly higher Biology and U.S. History growth scores.

In comparing the small schools (2006-2009) to their former traditional schools (2002-2005), year level analyses showed that, though small school students performed the same or better than traditional school students overall, there were significant differences in EOC performance by year. Olympic small school students in 2006-2007 generally performed worse than or on par with traditional school students from previous years and performed better in 2008-2009 than traditional school students from previous years. Garinger small school students in 2006-2007 generally outperformed Garinger traditional school students from previous years. Garinger small school students in 2007-2008 experienced a drop in performance, but then improved again in 2008-2009 to again outperform traditional school students.

When comparing adjusted EOC scores at Olympic and Garinger small schools, it was clear that the strongest predictor of performance was year; students at both small schools performed best in 2008-2009. Students at Garinger small schools outperformed Olympic small school students overall on Algebra I. However, when examined by year, we found that Garinger small school students performed far better than Olympic small school students in 2006-2007 while Olympic small school students performed marginally better than Garinger small school students in 2007-2008 and 2008-2009. Similarly, though we found no significant difference between Olympic and Garinger small schools in overall English I performance, we found that Garinger small school students outperformed Olympic small school students in 2006-2007, then dropped below Olympic small school students in 2007-2008 and again outperformed them in 2008-2009. Olympic students outperformed Garinger students overall in Civics and Economics and U.S. History. There was no significant difference between schools on Biology scores. Also, both small school campuses experienced a drop in scores in the year that all EOC eligible students attended the small schools. For Olympic, 2006-2007 was their first year of conversion. For Garinger, 2007-2008 was the first year that all 9th and 10th graders attended the small schools. However, both schools increased EOC scores in subsequent years.

In general, we found more variation in academic achievement within small schools than we found in other levels of analysis. For Olympic, while most small schools made yearly improvements International Studies made a dramatic increase in EOC performance in 2008-2009. Also, although Renaissance and METS maintained lower EOC performance than International Studies, they made notable improvement in 2008-2009. There was even greater variation in EOC performance between Garinger small schools. Although all small schools made improvement in EOC performance over time, International Studies made the steepest increase in 2008-2009. Also, New Technology was the highest performing Garinger small school in 2007-2008 and continued to make additional increases in EOC performance in 2008-2009.

As a result of these findings, we can conclude that students at small schools performed either the same or slightly better on the five Gateway EOCs than students did when these schools were traditional high schools. However, small school students do not perform appreciably better than matched comparison students from the best comparison high schools that were available (with the exception of Olympic's higher U.S. History growth scores). Nor does one group of small schools (Garinger or Olympic) definitively outperform the other. The greatest amount of variation in academic performance is within the small schools themselves. This seems to imply that other forces are at work to impact academic achievement within each small school. It may be that more successful small schools utilized innovative programming or scheduling practices to boost academic achievement. Or perhaps more successful small schools have been able to hire and retain successful teachers and leaders. It may be that the small school format helps to facilitate innovative practices, but given the wide variance in academic achievement within each group of small schools it appears that the small school format itself does not greatly improve academic achievement.

However, since school-level outcome data can be very unstable from year to year (especially in schools with small enrollment), trends may change as additional years worth of data become available and small schools continue to reform their efforts and change the climate on their campuses. Prior research on school improvement efforts suggests that a timeframe of five to six years is appropriate for assessing the viability of an educational intervention (Rhodes, Smerdon, Burt, Evan, Martinez, & Means, 2005). Thus, a considerate approach to evaluating student achievement at small schools would continue with a yearly evaluation that extends beyond year six.

REFERENCES

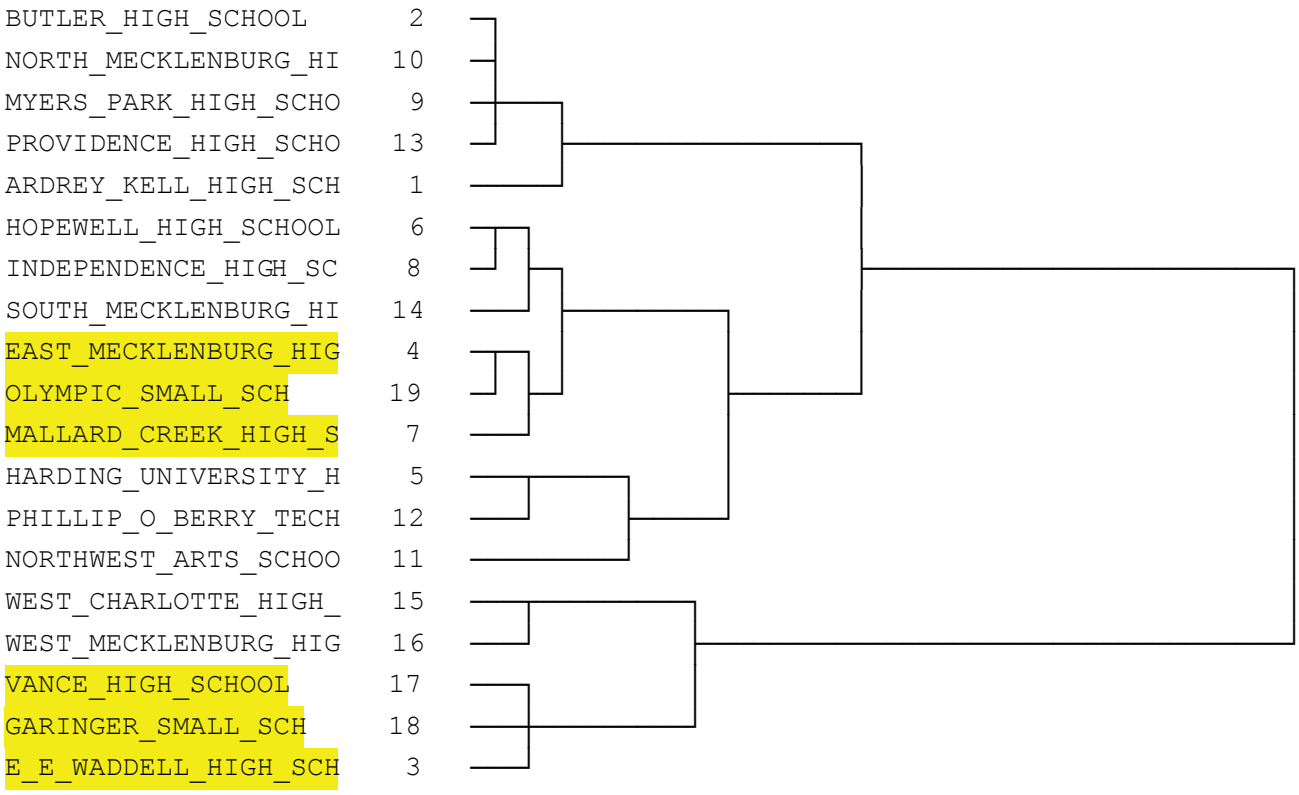
The Chicago Small Schools Research Team. 2000. Small Schools: Great Strides. *Bank Street* College of Education.

Cleary, M. & English, G. (2005). The small schools movement: Implications for health education. *Journal of School Helath*, *75*, 243.

Rhodes, D., Smerdon, B., Burt, W., Evan, A., Martinez, B., & B. Means. 2005. Getting to Results: Early Student Outcomes in New and Redesigned High Schools. *The National Evaluation of High School Transformations.*

APPENDIX A

Cluster Analysis High School Dendrogram



APPENDIX B

Descriptive Statistics for Categorical Matching Variables: Algebra I (Olympic)

	Olympic Composite	Comparison Group	Group Differences		
Algebra I	%	%	chi-square	Significance	df
Ethnicity			1.291	0.936	5
Black	51.9%	53.0%			
White	18.4%	17.7%			
Hispanic	20.7%	22.6%			
Asian	5.3%	3.8%			
Am Indian	1.1%	1.1%			
Multi-Racial	2.6%	1.9%			
Gender			0.000	1.000	1
Male	48.5%	48.5%			
Female	51.5%	51.5%			
LEP	14.3%	16.9%	0.699	0.403	1
FRL	56.8%	57.1%	0.008	0.930	1
EC	9.4%	7.1%	0.892	0.345	1
AP/IB Enrollment	0.0%	0.0%	n/a	n/a	n/a
n=532					

Descriptive Statistics for Categorical Matching Variables: Biology (Olympic)

	Olympic Composite	Comparison Group	Group Differences		
Biology	%	%	chi-square	Significance	df
Ethnicity			1.711	0.888	5
Black	38.1%	35.3%			
White	30.3%	34.1%			
Hispanic	19.8%	18.0%			
Asian	8.0%	8.0%			
Am Indian	0.6%	0.9%			
Multi-Racial	3.1%	3.7%			
Gender			0.310	0.578	1
Male	41.5%	43.7%			
Female	58.5%	56.3%			
LEP	12.1%	9.9%	0.775	0.379	1
FRL	47.1%	44.3%	0.505	0.477	1
EC	5.0%	3.1%	1.443	0.230	1
AP/IB Enrollment	0.6%	0.6%	0.000	1.000	1
n=646					

Descriptive Statistics for Categorical Matching Variables: English (Olympic)

	Olympic Composite	Comparison Group	Group Differences		
English	**%**	**%**	**chi-square**	**Significance**	**df**
Ethnicity			0.529	0.991	5
Black	43.5%	44.1%			
White	26.6%	28.2%			
Hispanic	18.8%	17.2%			
Asian	7.8%	7.3%			
Am Indian	0.8%	0.8%			
Multi-Racial	2.4%	2.4%			
Gender			0.345	0.557	1
Male	51.6%	53.8%			
Female	48.4%	46.2%			
LEP	9.9%	8.1%	0.804	0.370	1
FRL	47.6%	44.1%	0.915	0.339	1
EC	6.5%	6.2%	0.023	0.880	1
AP/IB Enrollment	0.0%	0.0%	n/a	n/a	n/a
n=744					

Descriptive Statistics for Categorical Matching Variables: U.S. History (Olympic)

	Olympic Composite	Comparison Group	Group Differences		
U.S. History	**%**	**%**	**chi-square**	**Significance**	**df**
Ethnicity			0.543	0.969	4
Black	46.1%	47.6%			
White	34.6%	32.5%			
Hispanic	11.4%	11.7%			
Asian	6.6%	7.2%			
Am Indian	0.0%	0.0%			
Multi-Racial	1.2%	0.9%			
Gender			0.096	0.756	1
Male	50.6%	49.4%			
Female	49.4%	50.6%			
LEP	7.8%	8.4%	0.081	0.776	1
FRL	37.0%	36.7%	0.006	0.936	1
EC	6.9%	4.8%	1.335	0.248	1
AP/IB Enrollment	32.2%	35.8%	0.966	0.326	1
n=664					

Descriptive Statistics for Categorical Matching Variables: Civics & Economics (Olympic)

	Olympic Composite	Comparison Group	Group Differences		
Civics & Economics	%	%	chi-square	Significance	df
Ethnicity			1.051	0.958	5
Black	40.5%	41.6%			
White	28.6%	28.8%			
Hispanic	20.1%	17.8%			
Asian	7.3%	7.6%			
Am Indian	0.9%	0.9%			
Multi-Racial	2.5%	3.2%			
Gender			0.018	0.892	1
Male	46.0%	45.5%			
Female	54.0%	54.5%			
LEP	11.7%	8.7%	2.114	0.146	1
FRL	45.5%	46.5%	0.074	0.786	1
EC	6.6%	6.6%	0.000	1.000	1
AP/IB Enrollment	0.9%	0.9%	0.000	1.000	1
n=874					

Descriptive Statistics for Categorical Matching Variables: Algebra I (Garinger)

	Garinger Composite	Comparison Group	Group Differences		
Algebra I	%	%	chi-square	Significance	df
Ethnicity			2.505	0.644	4
Black	67.5%	68.5%			
White	3.9%	2.0%			
Hispanic	24.1%	26.1%			
Asian	3.0%	3.0%			
Am Indian	0.0%	0.0%			
Multi-Racial	1.5%	0.5%			
Gender			0.488	0.485	1
Male	42.9%	46.3%			
Female	57.1%	53.7%			
LEP	18.7%	19.7%	0.063	0.801	1
FRL	85.7%	85.2%	0.200	0.888	1
EC	10.8%	10.3%	0.026	0.872	1
AP/IB Enrollment	7.4%	0.0%	15.575	0.000	1
n=406					

Descriptive Statistics for Categorical Matching Variables: Biology (Garinger)

	Garinger Composite	Comparison Group	Group Differences		
Biology	**%**	**%**	**chi-square**	**Significance**	**df**
Ethnicity			1.084	0.897	4
Black	60.6%	64.1%			
White	6.9%	6.6%			
Hispanic	25.9%	24.3%			
Asian	4.6%	3.9%			
Am Indian	0.0%	0.0%			
Multi-Racial	1.9%	1.2%			
Gender			0.070	0.792	1
Male	52.9%	54.1%			
Female	47.1%	45.9%			
LEP	19.3%	17.4%	0.322	0.570	1
FRL	77.2%	76.8%	0.011	0.917	1
EC	7.7%	7.3%	0.028	0.870	1
AP/IB Enrollment	5.4%	0.8%	9.287	0.002	1
n=518					

Descriptive Statistics for Categorical Matching Variables: English (Garinger)

	Garinger Composite	Comparison Group	Group Differences		
English	**%**	**%**	**chi-square**	**Significance**	**df**
Ethnicity			0.790	0.940	4
Black	62.6%	64.7%			
White	4.7%	3.7%			
Hispanic	28.3%	27.0%			
Asian	3.1%	3.4%			
Am Indian	0.0%	0.0%			
Multi-Racial	1.3%	1.3%			
Gender			1.026	0.311	1
Male	51.6%	47.9%			
Female	48.4%	52.1%			
LEP	21.5%	20.4%	0.126	0.722	1
FRL	81.9%	81.9%	0.000	1.000	1
EC	10.5%	8.9%	0.539	0.463	1
AP/IB Enrollment	4.5%	0.0%	17.387	0.000	1
n=764					

Descriptive Statistics for Categorical Matching Variables: U.S. History (Garinger)

	Garinger Composite	Comparison Group	Group Differences		
U.S. History	%	%	chi-square	Significance	df
Ethnicity			0.864	0.930	4
Black	62.1%	63.2%			
White	8.4%	10.0%			
Hispanic	23.0%	21.1%			
Asian	3.4%	3.4%			
Am Indian	0.0%	0.0%			
Multi-Racial	3.1%	2.3%			
Gender			0.031	0.861	1
Male	51.0%	51.7%			
Female	49.0%	48.3%			
LEP	12.3%	11.1%	0.167	0.683	1
FRL	72.4%	69.0%	0.749	0.387	1
EC	6.9%	8.4%	0.433	0.510	1
AP/IB Enrollment	42.9%	28.7%	11.407	0.001	1
n=522					

Descriptive Statistics for Categorical Matching Variables: Civics & Economics (Garinger)

	Small Schools Interim Report	Comparison Group	Group Differences		
Civics & Economics	%	%	chi-square	Significance	df
Ethnicity			0.535	0.970	4
Black	63.3%	64.3%			
White	6.7%	7.4%			
Hispanic	24.4%	23.0%			
Asian	3.9%	3.2%			
Am Indian	0.0%	0.0%			
Multi-Racial	1.8%	2.1%			
Gender			0.114	0.736	1
Male	53.4%	54.8%			
Female	46.6%	45.2%			
LEP	18.4%	19.4%	0.104	0.747	1
FRL	77.7%	78.4%	0.041	0.839	1
EC	9.2%	10.2%	0.181	0.670	1
AP/IB Enrollment	5.7%	0.4%	13.645	0.000	1
n=566					

Descriptive Statistics for Continuous Matching Variables: Algebra I (Olympic)

	Olympic Composite		Comparison Group		Group Differences	
Algebra I	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Math EOG z-scores	-0.30	0.70	-0.34	0.75	-0.63	0.53
Unexcused Absences	6.18	7.99	5.98	8.14	-0.29	0.77
n=532						

Descriptive Statistics for Continuous Matching Variables: Biology (Olympic)

	Olympic Composite		Comparison Group		Group Differences	
Biology	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.12	0.86	-0.08	0.87	0.58	0.56
Unexcused Absences	5.93	6.80	5.80	7.14	-0.24	0.81
n=323						

Descriptive Statistics for Continuous Matching Variables: English (Olympic)

	Olympic Composite		Comparison Group		Group Differences	
English	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.11	0.91	-0.09	0.92	1.44	0.15
Unexcused Absences	5.07	6.71	4.66	5.60	-0.91	0.37
n=372						

Descriptive Statistics for Continuous Matching Variables: U.S. History (Olympic)

	Olympic Composite		Comparison Group		Group Differences	
U.S. History	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.08	0.87	-0.08	0.94	-0.02	0.98
Unexcused Absences	5.72	6.85	5.44	5.80	-0.58	0.57
n=332						

Descriptive Statistics for Continuous Matching Variables: Civics & Economics (Olympic)

	Olympic Composite		Comparison Group		Group Differences	
Civics & Economics	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.19	0.90	-0.23	0.93	-0.68	0.50
Unexcused Absences	5.75	5.93	5.92	7.55	0.37	0.71
n=437						

Descriptive Statistics for Continuous Matching Variables: Algebra I (Garinger)

	Garinger Composite		Comparison Group		Group Differences	
Algebra I	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Math EOG z-scores	-0.42	0.76	-0.42	0.74	-0.02	0.98
Unexcused Absences	8.37	9.00	6.84	5.90	-2.03	0.04
n=406						

Descriptive Statistics for Continuous Matching Variables: Biology (Garinger)

	Garinger Composite		Comparison Group		Group Differences	
Biology	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Math EOG z-scores	-0.29	0.80	-0.37	0.86	-1.08	0.28
Unexcused Absences	8.00	10.24	8.12	8.02	0.14	0.89
n=259						

Descriptive Statistics for Continuous Matching Variables: English (Garinger)

	Garinger Composite		Comparison Group		Group Differences	
English	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.35	0.81	-0.34	0.84	0.23	0.82
Unexcused Absences	8.85	9.66	8.09	10.07	-1.06	0.29
n=203						

Descriptive Statistics for Continuous Matching Variables: U.S. History (Garinger)

	Garinger Composite		Comparison Group		Group Differences	
U.S. History	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.27	0.87	-0.35	0.92	-1.05	0.29
Unexcused Absences	8.92	9.52	7.82	8.81	-1.37	0.17
n=261						

Descriptive Statistics for Continuous Matching Variables: Civics & Economics (Garinger)

	Garinger Composite		Comparison Group		Group Differences	
Civics & Economics	**Mean**	**SD**	**Mean**	**SD**	**t**	**Significance**
8th Grade Reading EOG z-scores	-0.57	0.86	-0.64	0.90	-0.88	0.38
Unexcused Absences	8.25	10.32	8.39	9.50	0.16	0.87
n=283						

APPENDIX C

Demographics for All Schools in 2008-2009

		OLY MPHC TRADITIONAL 0506	Olympic Biotech	Olympic Renaissance	Olympic Math Engineering	Olympic Intl Studies	Olympic Intl Business	Olympic Composite	East Mech High School	Midland Creek High School	GARINGER TRADITIONAL 0506	GARINGER TRADITIONAL 0809	Garinger Math & Science	Garinger Leadership & Public	Garinger Business & Finance	Garinger Technology	Garinger Intl Studies	Garinger Composite	Vance High School	Waddell High School	CMS
GRADE LEVEL	9	603	120	101	119	112	92	544	756	578	546	27	120	131	123	99	118	591	572	314	11358
		35.7%	33.7%	29.4%	30.8%	32.0%	27.3%	30.6%	37.7%	31.5%	36.0%	8.9%	45.3%	56.2%	45.1%	35.1%	49.0%	45.7%	34.3%	34.1%	32.7%
	10	463	105	87	104	94	90	480	495	474	389	23	88	58	90	100	63	399	435	217	8613
		27.4%	29.5%	25.4%	26.9%	26.9%	26.7%	27.1%	24.7%	25.8%	25.7%	7.5%	33.2%	24.9%	33.0%	35.5%	26.1%	30.8%	26.1%	23.6%	24.8%
	11	319	77	83	83	85	77	405	361	412	309	11	56	44	60	83	60	303	313	192	7509
		18.9%	21.6%	24.2%	21.5%	24.3%	22.8%	22.9%	18.0%	22.5%	20.4%	3.6%	21.1%	18.9%	22.0%	29.4%	24.9%	23.4%	18.8%	20.9%	21.6%
	12	306	54	72	80	59	78	343	393	371	272	244	1	0	0	0	0	1	346	197	7243
		18.1%	15.2%	21.0%	20.7%	16.9%	23.1%	19.4%	19.6%	20.2%	17.9%	80.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.1%	20.8%	21.4%	20.9%
RACE	Black	742	153	134	100	166	209	762	973	984	1009	209	160	155	195	156	119	785	1138	509	15477
		43.9%	43.0%	39.1%	25.9%	47.4%	62.0%	43.0%	48.5%	53.6%	66.6%	68.5%	60.4%	66.5%	71.4%	55.3%	49.4%	60.7%	68.3%	55.3%	44.6%
	White	584	79	124	186	63	42	494	547	541	120	21	10	6	9	34	8	67	122	88	12735
		34.5%	22.2%	36.2%	48.2%	18.0%	12.5%	27.9%	27.3%	29.5%	7.9%	6.9%	3.8%	2.6%	3.3%	12.1%	3.3%	5.2%	7.3%	9.6%	36.7%
	Hispanic	240	67	66	52	75	74	334	298	154	292	60	72	57	52	64	98	343	307	293	3936
		14.2%	18.8%	19.2%	13.5%	21.4%	22.0%	18.8%	14.9%	8.4%	19.3%	19.7%	27.2%	24.5%	19.0%	22.7%	40.7%	26.5%	18.4%	31.8%	11.3%
	Asian	106	49	10	35	34	8	136	125	104	77	14	17	13	11	20	9	70	64	14	1760
		6.3%	13.8%	2.9%	9.1%	9.7%	2.4%	7.7%	6.2%	5.7%	5.1%	4.6%	6.4%	5.6%	4.0%	7.1%	3.7%	5.4%	3.8%	1.5%	5.1%
	Am Indian/Alaskan Native	8	1	0	4	3	1	9	6	9	6	0	1	0	0	0	1	2	5	3	148
		0.5%	0.3%	0.0%	1.0%	0.9%	0.3%	0.5%	0.3%	0.5%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.2%	0.3%	0.3%	0.4%
	Multiracial	11	7	9	9	9	3	37	56	43	12	1	5	2	6	8	6	27	30	13	687
		0.7%	2.0%	2.6%	2.3%	2.6%	0.9%	2.1%	2.8%	2.3%	0.8%	0.3%	1.9%	0.9%	2.2%	2.8%	2.5%	2.1%	1.8%	1.4%	2%
SEX	Female	840	224	211	116	178	159	888	1042	905	816	144	122	127	144	93	138	624	849	471	17153
		49.7%	62.9%	61.5%	30.1%	50.9%	47.2%	50.1%	52.0%	49.3%	53.8%	47.2%	46.0%	54.5%	52.7%	33.0%	57.3%	48.2%	51.0%	51.2%	49.4%
	Male	851	132	132	270	172	178	884	963	930	700	161	143	106	129	189	103	670	817	449	17570
		50.3%	37.1%	38.5%	69.9%	49.1%	52.8%	49.9%	48.0%	50.7%	46.2%	52.8%	54.0%	45.5%	47.3%	67.0%	42.7%	51.8%	49.0%	48.8%	50.6%
ED STATUS	Not ED	1019	188	197	262	162	147	956	986	1197	486	73	50	44	50	80	46	270	628	249	19990
		60.3%	52.8%	57.4%	67.9%	46.3%	43.6%	54.0%	49.2%	65.2%	32.1%	23.9%	18.9%	18.9%	18.3%	28.4%	19.1%	20.9%	37.7%	27.1%	57.6%
	ED	672	168	146	124	188	190	816	1019	638	1030	232	215	189	223	202	195	1024	1038	671	14733
		39.7%	47.2%	42.6%	32.1%	53.7%	56.4%	46.0%	50.8%	34.8%	67.9%	76.1%	81.1%	81.1%	81.7%	71.6%	80.9%	79.1%	62.3%	72.9%	42.4%
EC	None	1537	325	317	360	324	308	1634	1811	1700	1313	213	244	209	247	259	231	1190	1467	798	31603
		90.9%	91.3%	92.4%	93.3%	92.6%	91.4%	92.2%	90.3%	92.6%	86.6%	69.8%	92.1%	89.7%	90.5%	91.8%	95.9%	92.0%	88.1%	86.7%	91%
	EC	154	31	26	26	26	29	138	194	135	203	92	21	24	26	23	10	104	199	122	3120
		9.1%	8.7%	7.6%	6.7%	7.4%	8.6%	7.8%	9.7%	7.4%	13.4%	30.2%	7.9%	10.3%	9.5%	8.2%	4.1%	8.0%	11.9%	13.3%	9%
LEP	Not LEP	1539	303	315	351	284	289	1542	1757	1744	1240	240	192	179	223	218	164	976	1428	701	31696
		91.0%	85.1%	91.8%	90.9%	81.1%	85.8%	87.0%	87.6%	95.0%	81.8%	78.7%	72.5%	76.8%	81.7%	77.3%	68.0%	75.4%	85.7%	76.2%	91.3%
	LEP	152	53	28	35	66	48	230	248	91	276	65	73	54	50	64	77	318	238	219	3027
		9.0%	14.9%	8.2%	9.1%	18.9%	14.2%	13.0%	12.4%	5.0%	18.2%	21.3%	27.5%	23.2%	18.3%	22.7%	32.0%	24.6%	14.3%	23.8%	8.7%
AP/IB	AP	-	49	86	72	40	30	277	244	294	-	55	17	17	39	55	16	144	120	50	5861
		-	14.2%	21.8%	20.5%	11.2%	9.0%	15.6%	12.1%	16.0%	-	6.8%	7.4%	15.2%	21.8%	20.5%	11.2%	11.5%	7.2%	5.4%	16.7%
	IB	-	0	0	0	0	0	0	177	0	-	0	0	0	0	0	0	0	0	0	1131
		-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.8%	0.0%	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%
8th Grade Math	Not proficient	223	94	86	55	105	90	430	415	406	315	62	93	105	100	99	90	487	467	314	7276
		16.8%	31.5%	31.6%	15.8%	40.7%	38.1%	30.5%	26.3%	28.0%	28.8%	32.5%	48.9%	60.0%	53.5%	42.7%	47.1%	49.9%	38.1%	46.7%	25.8%
	Proficient	1105	204	186	293	153	146	982	1165	1046	779	129	97	70	87	133	101	488	759	359	20970
		83.2%	68.5%	68.4%	84.2%	59.3%	61.9%	69.5%	73.7%	72.0%	71.2%	67.5%	51.1%	40.0%	46.5%	57.3%	52.9%	50.1%	61.9%	53.3%	74.2%
	Total N	1328	298	272	348	258	236	1412	1579	1456	1094	191	190	175	187	231	191	974	1226	674	28250
	Z-score mean	-0.13	0.01	0.01	0.51	-0.24	-0.21	0.05	0.25	0.15	-0.54	-0.56	-0.31	-0.52	-0.47	-0.17	-0.28	-0.34	-0.19	-0.39	0.27
	St. Dev.	0.91	0.91	0.83	0.86	0.81	0.80	0.89	1.00	0.94	0.85	0.87	0.84	0.76	0.81	0.83	0.79	0.82	0.85	0.86	1.03
8th Grade Reading	Not proficient	184	65	56	49	72	58	300	349	272	258	43	80	82	83	72	67	384	346	233	5598
		13.9%	21.8%	20.7%	14.1%	28.0%	24.6%	21.3%	22.1%	18.7%	23.6%	22.6%	41.7%	46.3%	44.6%	31.3%	34.9%	39.3%	28.2%	34.7%	19.8%
	Proficient	1135	233	215	298	185	178	1109	1229	1184	834	147	112	95	103	158	125	593	882	438	22615
		86.1%	78.2%	79.3%	85.9%	72.0%	75.4%	78.7%	77.9%	81.3%	76.4%	77.4%	58.3%	53.7%	55.4%	68.7%	65.1%	60.7%	71.8%	65.3%	80.2%
	Total N	1319	298	271	347	257	236	1409	1577	1458	1092	190	192	177	186	230	192	977	1228	673	28220
	Z-score mean	-0.11	-0.15	0.01	0.20	-0.29	-0.33	-0.09	0.06	0.08	-0.54	-0.61	-0.63	-0.70	-0.76	-0.33	-0.44	-0.56	-0.35	-0.51	0.08
	St. Dev.	0.98	0.93	0.92	0.90	0.93	0.86	0.93	1.01	0.92	0.94	0.97	0.89	0.86	0.87	0.83	0.92	0.89	0.91	0.91	1.02

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