

Evaluation of Rocketship Students' Middle School Outcomes

Final Report

August 2016

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Prepared for

Jan Faraguna
Director, Analytics
Rocketship Education
Email: jfaraguna@rsed.org

Lynn Liao
Chief Programs Officer
Rocketship Education
Email: lliao@rsed.org

Submitted by

Naomi Tyler
Samantha Astudillo
Betsy Wolf, Ph.D.
Matt McCracken

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Executive Summary

Rocketship Education is a national non-profit network of public elementary charter schools serving low-income communities with limited access to excellent schools. Founded in 2006, Rocketship Education is a 501(c)(3) nonprofit corporation whose mission is to eliminate the achievement gap by building a scalable and sustainable school model that propels student achievement in underserved communities across the country. Rocketship’s instructional model is a teacher-led, technology supported approach to personalized learning. As K–5 educators, they aim to provide students with a strong academic foundation during elementary school so that students can be successful learners during every stage of their education. To evaluate their performance against this goal, Rocketship Education contracted with the Center for Education Policy at SRI International in 2014 to conduct a rigorous independent evaluation of Rocketship alumni’s middle school readiness and academic success compared with peers who did not attend a Rocketship elementary school.

With the ultimate goal of providing Rocketship Education with data to inform future planning and make adjustments as needed, the key evaluation objectives addressed in this report are:

- Understand how the middle school performance of Rocketship alumni compares with that of non-Rocketship peers who enter middle school with similar demographic characteristics.
- Understand how Rocketship alumni transition to and perform in middle school, initially and throughout.
- Identify differences in socio-emotional attitudes and mindsets (e.g., self-efficacy, motivation, and grit), academic behaviors (e.g., studying, completing homework, and paying attention in class), academic aspirations, and school satisfaction levels between Rocketship alumni and their middle school peers.

Study Design

The research team used a mixed-methods design that included analyses of student-level data, parent and student focus groups, and an online student survey. The study sample comprised all middle school students attending seven charter middle schools in the San Jose area—both Rocketship alumni who had attended Rocketship elementary schools in the San Jose area and transitioned to middle school in the 2012–13, 2013–14, and 2014–15 years and a comparison group of non-Rocketship peers who had not attended Rocketship elementary schools. We were able to analyze middle school academic outcomes for 61% of all Rocketship alumni from this timeframe.

To compare middle school academic outcomes for Rocketship alumni and their non-Rocketship peers, the research team compared student achievement data from the Northwest Evaluation Association’s (NWEA) Measures of Academic Progress (MAP) standardized tests in math and reading, and the Smarter Balanced Assessment Consortium’s (SBAC) assessments in math and English language arts (ELA), controlling for differences in students’ demographic characteristics using propensity score weighting and multiple linear regression. To compare socio-emotional outcomes, academic aspirations, and satisfaction levels for Rocketship alumni and their non-Rocketship peers, the team analyzed differences in the two groups’ survey responses. We triangulated these quantitative findings with the focus group data to better understand Rocketship alumni’s perceptions of their success in middle school.

Key Findings

Middle School Academic Outcomes

- Rocketship alumni in their first year of middle school outperformed their non-Rocketship peers on both spring middle school assessments, in both math and reading/ELA.
 - Rocketship alumni are approximately one year ahead of their peers in math achievement by the end of the first year of middle school.
 - Rocketship alumni are approximately one half to three quarters of a year ahead of their peers in reading achievement by the end of the first year of middle school.
- Rocketship alumni in their second year of middle school outperformed their non-Rocketship peers on both spring middle school assessments in math. Rocketship alumni outperformed their peers on one of two reading/ELA assessments.
 - Rocketship alumni are approximately one year ahead of their peers in math achievement by the end of the second year of middle school.
 - Rocketship alumni are almost one year ahead of their peers in reading achievement on NWEAP MAP by the end of the second year of middle school.

Middle School Transition

- Student survey data indicated that Rocketship alumni were more likely than their non-Rocketship peers to attribute their preparedness for middle school to their elementary school experience.
- Rocketship alumni were also more likely than their non-Rocketship peers to report feelings of belonging in middle school, including feeling proud, safe, and happy, according to student survey data.
- Rocketship alumni were more likely than their non-Rocketship peers to report being involved in choosing their middle school.

Socio-emotional Attitudes and Mindsets

- The large majority of both Rocketship alumni and their non-Rocketship peers reported high levels of self-efficacy, motivation, and grit (e.g, persistence); and about half of Rocketship alumni and their non-Rocketship peers reported positive perceptions about their ability to learn and grow (i.e., growth mindset).
- The majority of Rocketship alumni and their non-Rocketship peers reported that graduating from high school and college is very important to them.
- Rocketship alumni were more likely than their non-Rocketship peers to report that someone at their elementary school talked with them about planning for high school and college.

Introduction

Study Background

Rocketship Education is a national non-profit network of public elementary charter schools serving low-income communities with limited access to excellent schools. Founded in 2006, Rocketship Education is a 501(c)(3) nonprofit corporation whose mission is to eliminate the achievement gap by building a scalable and sustainable school model that propels student achievement in underserved communities across the country. Rocketship's instructional model is a teacher-led, technology supported approach to personalized learning. As K–5 educators, they aim to provide students with a strong academic foundation during elementary school so that students can be successful learners during every stage of their education. To evaluate their performance against this goal, Rocketship Education contracted with the Center for Education Policy at SRI International in 2014 to conduct a rigorous independent evaluation of Rocketship alumni's middle school readiness and academic success compared with peers who did not attend a Rocketship elementary school.

As other studies have shown, middle school is an important and often difficult transition for students (Akos, & Galassi, 2004; Chung, Elias, & Schneider, 1998; Eccles & Midgley, 1990; Ecces et al., 1993; Theriot & Dupper, 2009). In particular, students from low socioeconomic backgrounds, such as the students that Rocketship strives to serve, face particular hardships as they transition into their new environment, which in turn affects their ability to succeed (e.g., Gutman & Midgley, 2000; Murdock, 1999). More broadly, students' experience with the transition may affect their academic outcomes and socio-emotional dispositions in middle school (e.g., motivation, self-efficacy), which can also affect longer-term outcomes (Hill, N. E., & Tyson, D. F., 2009; Kuperminc, Leadbeater, & Blatt, 2001). Students' socio-emotional dispositions as they enter middle school also influence their middle school experience and academic outcomes (Wentzel, 1993). Combined with the importance of students' experience in middle school is the understanding that success in middle school remains a crucial indicator of success in high school and beyond (Murdock, Anderman, & Hodge, 2000). Given these research findings, and our ultimate goal of providing Rocketship Education with data to inform future planning, the key evaluation objectives addressed in this report are:

- Understand how the middle school performance of Rocketship alumni compares with that of non-Rocketship peers who enter middle school with similar demographic characteristics.
- Understand how Rocketship alumni transition to and perform in middle school, initially and throughout.
- Identify differences in socio-emotional attitudes and mindsets (e.g., self-efficacy, motivation, and grit), academic behaviors (e.g., studying, completing homework, and paying attention in class), academic aspirations, and school satisfaction levels between Rocketship alumni and their middle school peers.

About Rocketship

Rocketship Network of Schools

Rocketship Education was founded in California in 2006. The non-profit charter network, which seeks to eliminate the achievement gap through “a teacher-led, technology supported approach to personalized learning, robust professional development of excellent teachers and leaders, and deeply engaged parents,” has since grown from one school in San Jose, California, to sixteen schools across four regions nationwide in 2016 (Rocketship Education, n.d). Rocketship utilizes a blended learning approach—combining classroom instruction, technology-based learning, and tutoring—to provide all students with a personalized learning experience. Rocketship schools emphasize four core values for staff and students: respect, responsibility, persistence, and empathy (“Information on Our Rocketship Schools,” 2015). These values are integrated into instruction and expectations for student behavior. The founding families of each school collaboratively choose a fifth core value, reinforcing Rocketship’s emphasis on family engagement. These core values are designed to support students’ socio-emotional development and encourage students to take ownership of their academic outcomes.

Rocketship Students

As context for the evaluation and to better understand the characteristics of students served by Rocketship elementary schools, we compared student-level demographic and achievement data for Rocketship elementary students with publicly available data for students attending noncharter public elementary schools in the neighboring school districts (i.e., San Jose Unified, Alum Rock Union Elementary, and Franklin-McKinley Elementary) for the 2011–12 and 2012–13 academic years (Exhibit 1).¹

We found that Rocketship elementary schools enrolled larger proportions of students who were more socioeconomically disadvantaged than nearby noncharter public elementary schools. Specifically, in both the 2011–12 and 2012–13 school years, the vast majority of Rocketship students were designated as low-income (84% and 88%, respectively). Rocketship schools also served larger proportions of English learners (ELs) (68%) and Latino students (84%) during both academic years compared with noncharter public elementary schools in the neighboring districts.

¹ We focused on demographic and achievement data for the 2011–12 and 2012–13 school years because middle school students in our study attended elementary school in the 2011–12, 2012–13, and 2013–14 school years. California Standards Test (CST) data were the only standardized test data available to compare these student populations in these years; however, those data were not available in 2013–14 as California transitioned to using Smarter Balanced Assessments.

Exhibit 1
Demographic and Achievement Data for Students Attending Rocketship and Noncharter Public Elementary Schools in Neighboring Districts in the 2011–12 and 2012–13 School Years

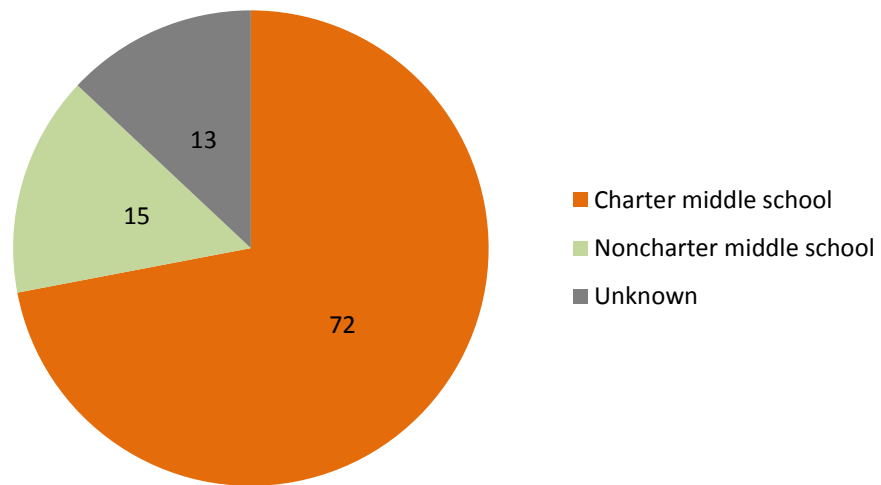
		Female (%)	Race (%)					Low-income (%)	English learner (%)	Scoring advanced or proficient (%)	
			Asian	Latino	African-American	White	Other			CST ELA Test	CST Math Test
2011–12	Rocketship	50	9	84	2	3	2	84	68	58	81
	Franklin-McKinley	48	33	59	2	2	4	76	57	50	61
	Alum Rock	48	12	79	2	2	5	80	54	50	67
	San Jose Unified	48	12	53	3	25	7	48	33	60	68
2012–13	Rocketship	51	10	84	2	2	2	88	68	50	77
	Franklin-McKinley	49	31	60	2	2	5	69	54	55	65
	Alum Rock	48	12	79	1	2	5	85	51	54	68
	San Jose Unified	48	12	53	3	25	7	46	33	61	68

Sources: California Department of Education publicly available data for nearby noncharter public elementary schools and Rocketship Education for Rocketship elementary schools.

Exhibit 1 also shows that Rocketship students were higher achieving in math than students who attended nearby noncharter public elementary schools. In 2011–12 and 2012–13, more than three-quarters of Rocketship students scored proficient or advanced on their California Standards Test (CST) math assessments, while about two-thirds of students in the neighboring elementary schools performed as well. In English language arts (ELA), Rocketship students’ achievement was mixed over the two years: In 2012–13 their scores were comparable to or lower than that of students attending nearby schools, but in 2011–12 their scores were comparable to or higher than their peers in neighboring districts.

Next, we examined middle school enrollment data for Rocketship alumni to better understand any trends in middle school matriculation. Specifically, we looked at enrollment data for Rocketship students who transitioned to middle school between the 2011–12 and 2013–14 school years. As Exhibit 2 indicates, the majority of Rocketship alumni (72%) attended a public charter middle school in the San Jose region upon leaving Rocketship.

Exhibit 2
Percentages of Rocketship Alumni Enrolled in Charter and Noncharter Middle Schools



Sources: Data provided by Rocketship Education. Data collected from California Longitudinal Pupil Achievement Data System (CALPADS).

Study Design

Overview

This study examines Rocketship alumni's middle school readiness and academic performance compared with peers who did not attend a Rocketship elementary school. The study population included Rocketship alumni enrolled in one of seven participating charter middle schools in the San Jose area between the 2012–13 and 2015–16 school years. The comparison group (non-Rocketship peers) comprised students who did not attend any Rocketship elementary school and who attended the participating charter middle schools in the same grade level and in the same academic years as the Rocketship alumni in our study.

To address the evaluation questions, the research team designed and executed a mixed-methods study that included analyses of student-level data, parent and student focus groups conducted in November and December 2014 and in January 2016, and an online student survey administered between December 2014 and January 2015 to Rocketship alumni and their non-Rocketship peers.

To compare middle school academic outcomes for Rocketship alumni relative to their non-Rocketship peers, the research team compared differences in students' test scores in math and reading or ELA on the Smarter Balanced Assessments (SBAC) and the Northwest Evaluation Association's (NWEA) Measures of Academic Progress (MAP).²

To compare socio-emotional attitudes and mindsets, academic behaviors, academic aspirations, and school satisfaction levels for Rocketship alumni and their non-Rocketship peers, the team analyzed differences in the two groups' survey responses. The survey included items related to key student behaviors and attitudes that Rocketship strives to instill, such as growth mindset, grit, management and organizational skills, study skills, motivation to learn, and self-efficacy to do well academically. We examined differences in survey responses for Rocketship alumni and their peers using *t* tests and Chi-square tests.³

In order to capture parents' and students' perspectives regarding their experience with Rocketship and the transition to middle school, the research team conducted an initial round of parent and student focus groups with Rocketship alumni in their first year of middle school and with their parents/guardians. The team then conducted a second round of student-only focus groups with Rocketship alumni in their second year of middle school.⁴ Focus group topics included the middle school choice and transition process, preparedness for middle school, satisfaction with middle school, and reflections on parents' and students' Rocketship experience. The research team triangulated quantitative findings with the focus group data to better understand Rocketship alumni's perceptions of their transition to and success in middle school.

² NWEA MAP test scores were available for all 3 years of the study, and Smarter Balanced Assessment (SBAC) scores were available only for the 2014–15 academic year. We also examined differences in students' test scores on the California Standards Tests (CSTs). However, because CST scores were available only for the 2012–13 academic year, and only for Rocketship alumni in one cohort, we do not include the CST results in this report.

³ We also analyzed survey responses by creating factors and testing for differences in factor scores for Rocketship alumni and their peers using multiple linear regression to control for differences in students' demographic characteristics. The two analyses yielded similar results, and thus we chose to present the descriptive analyses in this report for ease of interpretation.

⁴ Student focus group participants in their second year of middle school did not participate in the first round of focus groups.

Samples

Elementary and Middle School Sample

While Rocketship Education has continued to expand in the years since the students in this study left their Rocketship elementary school, this evaluation focuses only on middle school outcomes for students who attended one of the five Rocketship schools in operation during the 2011–12, 2012–13, and 2013–14 school years: Mateo Sheedy Elementary; Sí Se Puede Academy; Los Sueños Academy; Mosaic Elementary; and Discovery Prep. To select the sample of middle schools for this study, Rocketship identified charter middle schools in the San Jose area that enrolled a large number of Rocketship alumni. The research team collected data from seven charter middle schools operated by four different charter management organizations (CMOs): ACE, Alpha, Knowledge Is Power Program (KIPP), and Downtown College Prep (DCP).⁵

Student Sample

The research team collected student-level data for three cohorts of Rocketship alumni and their non-Rocketship peers enrolled in middle school during the 2012–13, 2013–14, and 2014–15 academic years—in other words, students who were in their first, second, and third years of middle school between 2012–13 and 2014–15.⁶

As exhibit 3 shows, first-year outcomes include all three cohorts of Rocketship alumni, second-year outcomes include two cohorts of Rocketship alumni, and third-year outcomes include only one cohort of Rocketship alumni. Cohort A includes students who left Rocketship in 2011–12, cohort B includes students who left Rocketship in 2012–13, and cohort C includes students who left Rocketship in 2013–14. Students in the second- and third-year-in-middle school dataset are a subset of the first-year-in-middle school dataset.⁷ The Rocketship alumni in the sample are a subset of all students who attended a Rocketship school during the study years. Specifically, of the 1,021 Rocketship alumni who attended a Rocketship elementary school and transitioned to middle school during the 2012–13, 2013–14, and 2015–16 school years, we were able to analyze middle school academic outcomes for 625 individual students (61%).⁸ We also analyzed middle school academic outcomes for 1,294 non-Rocketship peers (i.e., students who did not attend Rocketship elementary schools) (Exhibit 4).

⁵ Rocketship Education attempted to reach out to the noncharter districts to solicit their participation in the study but was unable to reach a mutually acceptable agreement. Therefore, collecting data from noncharter middle schools was not feasible. This omission is one limitation of this study.

⁶ While Rocketship elementary schools end in the 5th grade, some students leave in the 4th grade to attend a middle school that starts in 5th grade. Therefore, for analysis purposes, Rocketship alumni and their peers in their first year of middle school included 5th and 6th graders, Rocketship alumni and their peers in their second year of middle school include 6th and 7th graders, and Rocketship alumni and their peers in their third year of middle school included 7th and 8th graders.

⁷ Twenty-two Rocketship alumni were found in the second- and third-year dataset but were not present in the first-year dataset. These 22 Rocketship alumni were still included in the analysis, bringing the total Rocketship alumni count to 625.

⁸ The research team excluded from the study any students who attended Rocketship for fewer than three semesters because these students were not enrolled at a Rocketship elementary school for a long enough period of time to have experienced Rocketship's various programmatic features. Consequently, the 39% of Rocketship alumni who are not included in our sample either attended Rocketship for fewer than three semesters or did not attend one of the seven participating middle schools.

Exhibit 3
Rocketship Alumni Cohorts Included in Analysis Samples

	Cohort A: transitioned to middle school in 2012-13	Cohort B: transitioned to middle school in 2013-14	Cohort C: transitioned to middle school in 2014-15
Included in 1st-year analysis sample: 5th & 6th grade	Yes	Yes	Yes
Included in 2nd-year analysis sample: 6th & 7th grade	Yes	Yes	No
Included in 3rd-year analysis sample: 7th & 8th grade	Yes	No	No

As shown in Exhibit 4, Rocketship alumni and their non-Rocketship peers were comparable in terms of demographic characteristics; however, there were a few key differences. Most notably, a lower proportion of Rocketship alumni in their first year of middle school qualified as low-income (10% fewer) compared with their non-Rocketship peers. For Rocketship alumni who were in their second or third year of middle school, a lower proportion of Rocketship alumni were designated ELs compared with their non-Rocketship peers. Additionally, lower proportions of Rocketship alumni in their first, second, and third years of middle school were special education students relative to their non-Rocketship peers. Although these differences indicate a possible advantage for Rocketship students in our sample, we control for demographic differences in our analyses.

Exhibit 4
Demographic Characteristics of Rocketship Alumni and Non-Rocketship Peers in Study Sample

		N	Female (%)	Race (%)					Low-income (%)	English learner (%)	Special education (%)
				Asian	Latino	African-American	White	Other			
First year in middle school (5th & 6th grades)	Rocketship alumni	603	49	10	83	1	4	1	79	40	6
	Non-Rocketship peers	1,121	46	12	82	1	4	2	89	39	10
Second year in middle school (6th & 7th grades)	Rocketship alumni	234	51	6	91	0	4	1	88	32	7
	Non-Rocketship peers	1,094	46	9	84	1	1	2	91	37	11
Third year in middle school (7th and 8th grades)	Rocketship alumni	69	48	7	93	0	0	0	88	17	6
	Non-Rocketship peers	772	43	9	90	0	0	1	90	32	10

Source: Participating CMOs

Note 1: The exhibit shows sample descriptive statistics for Rocketship alumni and their non-Rocketship peers who were in their first, second, and third years of middle school.

Note 2: Although there were 625 total Rocketship alumni in our middle school academic outcomes sample, middle school data for each alumnus were available only in select years. Therefore, not all 625 students were found in the first-year-in-middle school data set: 22 students were only found in the second- and third-year-in-middle school datasets.

Note 3: The demographic characteristics were calculated using data from the year in middle school identified (i.e., first year, second year, or third year).

Analytic Approach

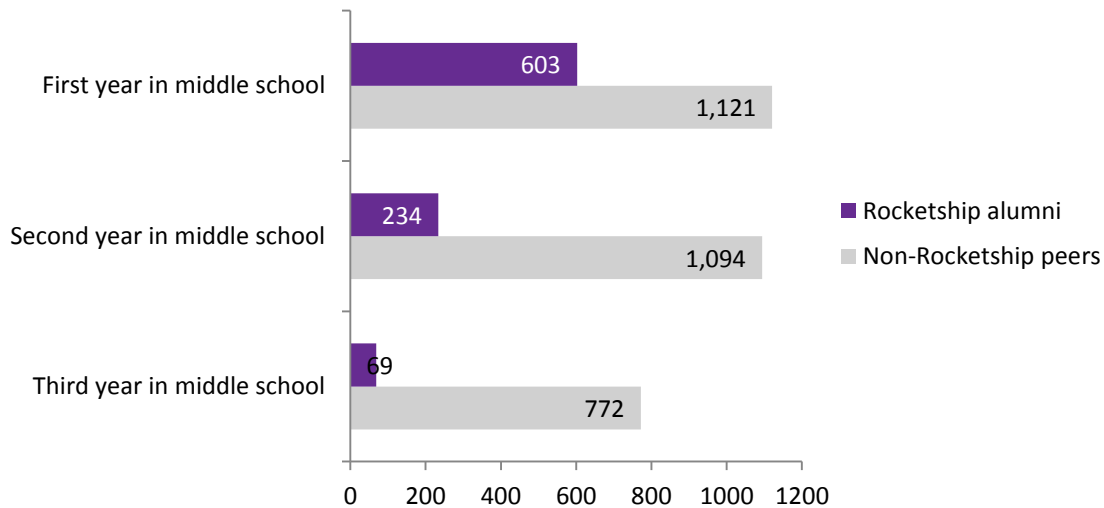
Middle School Academic Outcomes

To compare middle school performance for Rocketship alumni and their non-Rocketship peers, the research team used propensity score weighting and multiple linear and logistic regression while controlling for differences in students' demographic characteristics. More simply, we compared middle school outcomes for Rocketship alumni and their peers who attended the same middle school and were similar in terms of socioeconomic status, race, gender, special education status, EL status, and grade level.

We analyzed academic outcomes for Rocketship alumni who were 1, 2, or 3 years removed from Rocketship elementary schools (and in their first, second, and third years of middle school, respectively) to determine if positive effects associated with attending Rocketship elementary schools persisted over multiple years. To select comparison students to include in the first-, second-, and third-year-in-middle school analyses, we selected non-Rocketship peers who were in the same grade level as the Rocketship alumni in the same academic year.

Exhibit 5 highlights the number of Rocketship alumni included in each analysis (also shown in Exhibit 4, above). As explained above, each year-in-middle school analysis includes a subset of students from the entire sample, and therefore, the sample decreases in the second-year and third-year analyses. The third-year out sample is a small subsample (7%) of all Rocketship alumni included in our study. However, it comprises 63% of all Rocketship alumni who started middle school in the 2012–13 academic year.

Exhibit 5
A Closer Look at Rocketship Alumni and Their Non-Rocketship Peers Included in Each Outcomes Analysis



Source: Participating CMOs

Propensity score weighting enabled us to control for student demographic differences between Rocketship alumni and their non-Rocketship peers. We first calculated the propensity score weights by estimating the probability that students attended Rocketship elementary schools based on their demographic characteristics and grade level in a given academic year. We then used the probabilities to create weights for non-Rocketship peers, and we incorporated the weights into the regression analysis. As a result of propensity score weighting, non-Rocketship peers who were similar to Rocketship alumni in terms of student demographic characteristics were weighted more heavily in the analysis while non-Rocketship peers who were dissimilar to Rocketship alumni did not substantially influence the results.

Ideally, we would have also accounted for differences in student achievement before attending Rocketship and comparison elementary schools. To do so, we would have needed to collect achievement data from a time point prior to when most students began attending Rocketship elementary schools; however, achievement data are generally not available prior to elementary school. Therefore, even after controlling for differences in students’ demographic characteristics we cannot attribute Rocketship alumni’s performance in middle school to the experience of attending a Rocketship elementary school. Students who attended Rocketship elementary schools may have systematically differed from students who attended non-Rocketship elementary schools in terms of academic preparation (e.g., preschool experience) or in other unobserved ways (e.g., parental education level and motivation) upon entry into elementary school. Therefore, the relationship between attending Rocketship elementary schools and middle school academic performance estimated in this study is correlational rather than causal.

Middle School Student Survey

To capture student behaviors and attitudes, the research team administered an online survey to all middle school students (both Rocketship alumni and their non-Rocketship peers) in the 5th through 8th grades attending one of the seven participating charter middle schools in San Jose in winter of the 2014–15 academic year. In total, the sample included 644 Rocketship alumni and 1,212 non-Rocketship peers and achieved an overall response rate of 95%.⁹ The survey was administered during the school day at each middle school in the presence of a school staff member. Survey items were on a 4- or 5-point likert scale. The research team dichotomized the responses into two categories and ran Chi-square tests on the results.

Parent and Student Focus Groups

In order to capture parents' and students' perspectives regarding their experience with Rocketship and the transition to middle school, the research team conducted an initial round of parent and student focus groups in November and December 2014 with Rocketship alumni and with their parents/guardians.¹⁰ Parents and students were interviewed separately. All students who participated in the focus groups were then in their first year of middle school, in either 5th or 6th grade, and had left Rocketship at the end of the 2013–14 school year. The students represented all five Rocketship elementary schools in the study and six of the seven participating charter middle schools. Focus group topics included the middle school choice and transition process, preparedness for middle school, satisfaction with middle school, and reflections on their Rocketship experience. In total, 14 parents and 13 students participated.

To examine students' continued experience in the transition to middle school, the research team conducted a second round of student-only focus groups in January and February 2016 with Rocketship alumni in their second year of middle school, in either 6th or 7th grade. As in the first round of focus groups, all students who participated in the second focus groups left their Rocketship school at the end of the 2013–14 school year. Topics included students' continued experiences with the transition to middle school, preparedness for middle school, satisfaction with middle school, and reflections on their Rocketship experience. In total, 34 students participated across five participating charter middle schools.

In response to challenges faced in participant recruitment and logistics coordination for the first round of focus groups, the research team adjusted recruitment strategies and logistics for the second round of student-only focus groups. Specifically, a team of bilingual researchers reached out to approximately 88 families for the first round of parent and student focus groups, and focus groups were held at Rocketship elementary schools in the evening. However, factors such as transportation and time constraints ultimately affected whether families were able to attend, as reflected in the final participant count. For the second round of student-only focus groups, the research team sought to ease the logistical constraints on families, thereby minimizing selection bias (i.e., create a situation where only the most motivated or least logistically constrained participants attend) and ensuring a more representative participant sample. To accomplish this, the team randomly selected Rocketship alumni who were in their second year of middle school across five of the seven middle schools. To achieve a high participation rate, focus groups were conducted during the school day at each of the participating charter middle schools. The random sampling strategy used in this second round of focus groups, coupled with the change in location and the absence of parents, may help explain differences in findings and participation rates from the first round of focus groups.

⁹ The outcomes sample was 97% of the survey sample; both samples were largely the same in terms of students' demographic characteristics. The remaining 3% are the students that we had in our survey sample but for whom we did not receive outcomes data.

¹⁰ Given the focus of this study on the middle school outcomes of Rocketship alumni, the research team only conducted focus groups with Rocketship alumni and their parents or guardians; they did not conduct focus groups with non-Rocketship peers.

Ultimately, given the small sample size and self-selection of families volunteering to participate in the first round of focus groups, and the relatively small sample of students who participated in the second round compared to the overall sample, the findings should not be considered representative of the views of all Rocketship families and students and should be interpreted with caution. Where appropriate, we have included quotations and findings from the focus groups that support the student survey and outcomes findings.

Organization of the Report

In the next section, we report on the key findings of the evaluation. We first delve into findings related to Rocketship alumni's academic performance in middle school relative to their peers. Next, we summarize Rocketship alumni's perceptions of their transition to middle school. We then discuss findings regarding Rocketship alumni's socio-emotional attitudes and mindsets (e.g., self-efficacy, motivation, and grit) compared with their peers. We also present Rocketship alumni's perceptions of academic behaviors that are important for being academically successful in high school and beyond as well as their academic aspirations. Finally, we offer high-level conclusions and suggested areas for future research.

Findings

Middle School Performance for Rocketship Alumni and their Peers

To understand how well Rocketship alumni are performing in middle school relative to their non-Rocketship peers, we explored differences in students' test scores. Standardized tests are designed to measure students' progress against learning benchmarks. With that in mind, we compared differences in the following academic outcomes:

- The Northwest Evaluation Association's (NWEA) Measures of Academic Progress (MAP) standardized tests in math and reading, which were administered in the fall and spring of the 2012–13, 2013–14, and 2014–15 academic years; and
- The Smarter Balanced Assessment Consortium's (SBAC) assessments in math and English language arts (ELA), which were administered in the spring of the 2014–15 academic year.¹¹

Looking Across Assessments

Rocketship alumni in their first and second years of middle school outperformed their peers in math on both the NWEA MAP and SBAC tests by approximately one year of expected growth. Rocketship alumni in their first and second years of middle school outperformed their peers in NWEA MAP reading by almost one year of expected growth. Rocketship alumni in their first year of middle school in 2014–15 outperformed their peers in SBAC ELA by approximately one half year of expected growth.

Exhibit 6 displays the estimated differences (in standard deviations) in middle school performance for Rocketship alumni and their peers. Rocketship alumni in their first and second years of middle school outperformed similar peers on the NWEA MAP math and reading tests and on the SBAC math assessment. Rocketship alumni in their first year of middle school outperformed similar peers on the SBAC ELA assessment. The estimated differences in middle school performance for Rocketship alumni and similar peers are both statistically significant as well as educationally meaningful.¹²

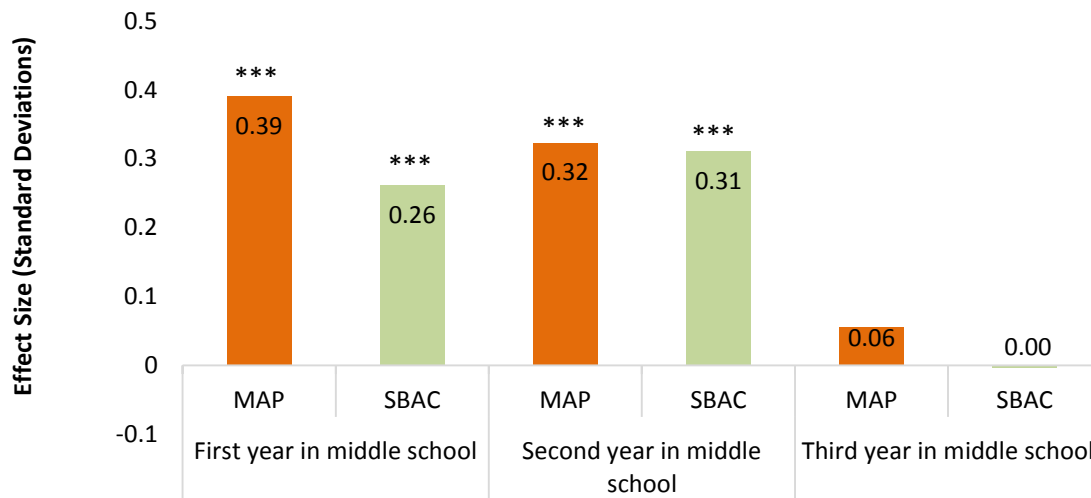
Standardizing test scores (i.e., converting them from the raw scores to standard deviations) allows us to compare different assessments over multiple years and look at them in one graph. Additionally, they allow us to compare data from this study to other studies. Researchers have determined that across a number of standardized tests, students in their first and second years of middle school (5th through 7th grades) improve their performance in math by 0.34 standard deviations (SDs) each academic year, on average (Hill, Bloom, Black, & Lipsey, 2008). Applying this research, exhibit 6 shows that the estimated differences on the NWEA MAP math assessments for Rocketship alumni in their first year of middle school and their peers represent just over one year of growth for the average student in the United States (0.39 SDs vs. 0.34 SDs). The trend is similar when looking at the NWEA MAP math assessments in the second year of middle school, as the estimated differences for Rocketship alumni and their peers is approximately one year of growth for the average student in the US (0.32 SDs vs. 0.34 SDs). The results for SBAC math in the first and second year are also positive, representing 76% and 91% of a year of growth, respectively (0.26 and 0.31 SDs,

¹¹ There was no state standardized test administered in the 2013–14 academic year. Results for the CSTs, which were administered in the 2012–13 academic year, were not included in this report because CST scores were available only for a small subset of the study sample.

¹² Statistical significance refers to the p value of the treatment effect, whereas the practical significance of the treatment effect is determined by the magnitude of the effect. Researchers claim that a finding is statistically significant when the analysis produces a p value of less than .05., which means that there is a 5% chance that the implication of the results would be inaccurate and the results would have arisen by chance.

respectively, vs. 0.34 SDs). These findings suggest that, at the end of the first and second year of middle school, Rocketship alumni were about one year ahead of their peers in math achievement, as measured by both the NWEA MAP and SBAC assessments. A long history of evidence strongly suggests that success in middle school math predicts students' success in high school and college (Finkelstein, Fong, Tiffany-Morales, Shields, & Huang, 2012; Oakes, Gamoran, & Page, 1992; Snipes, Huang, Jaquet, & Finkelstein, 2015; Stevenson, Schiller, & Schneider, 1994; Wang & Goldschmidt, 2003;). Therefore, Rocketship alumni's sustained success in math, as measured by NWEA MAP and SBAC assessments, is promising for their long-term academic success.

Exhibit 6
Estimated Differences on Middle School Assessments for Rocketship Alumni and Their Peers in Math



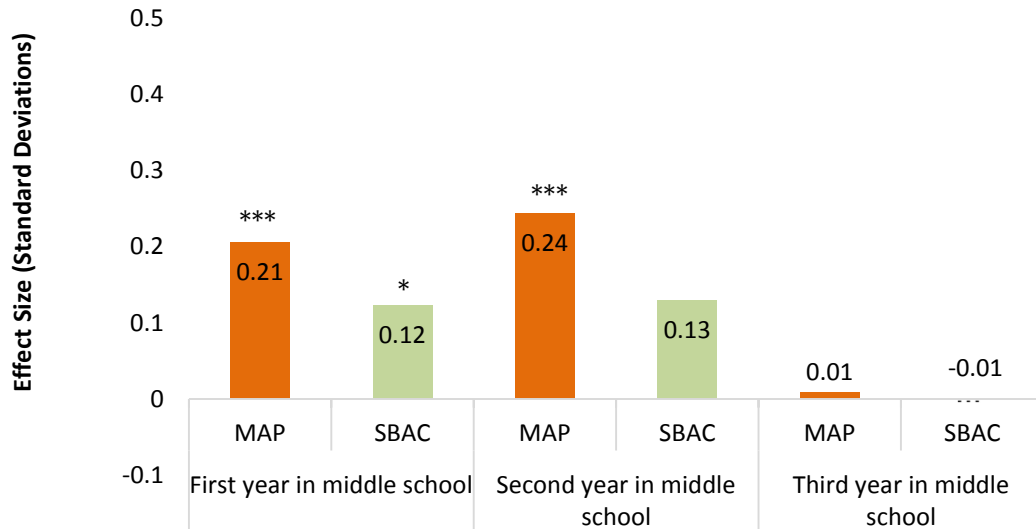
* $p < .05$, ** $p < .01$, *** $p < .001$

Source: Participating CMOs

Notes: "MAP" denotes the NWEA MAP assessments. "SBAC" denotes the Smarter Balanced Assessment Consortium's assessments.

Similarly, researchers have shown that middle school students improve their performance in reading annually by 0.27 standard deviations each academic year, on average (Hill, Bloom, Black, & Lipsey, 2008). The estimated differences for Rocketship alumni and their peers in reading are not as large as they are in math, but they follow a similar trend. Using 0.27 as a benchmark, in the first and second years of middle school, the estimated differences for Rocketship alumni and their peers on the NWEA MAP reading test represent almost one year of growth for the average student in the US (0.21 and 0.24 SDs, respectively, vs. 0.27 SDs). Like in math, the differences between Rocketship alumni and their peers on the SBAC assessments were smaller, but still positive in the first and second years of middle school, representing roughly one half year of growth in each year (0.12 and 0.13 SDs vs. 0.27 SDs) (see Exhibit 7).

Exhibit 7
Estimated Differences on Middle School Assessments for Rocketship Alumni and Their Peers in Reading/ELA



* $p < .05$, ** $p < .01$, *** $p < .001$

Source: Participating CMOs

Notes: "MAP" denotes the NWEA MAP assessments. "SBAC" denotes the Smarter Balanced Assessment Consortium's assessments.

Comparing estimated differences for Rocketship alumni and their peers to how much middle school students in the US improve their performance in math and reading annually provides some context for interpreting the results. However, we would caution that the national estimates apply to a national sample and for different assessments than those included in this report; therefore, these comparisons are purely descriptive and only included as general references.

We found no differences in middle school performance for Rocketship alumni in their third year of middle school and their peers. Importantly, Rocketship alumni in their third year of middle school constitute only 7% of all Rocketship alumni in our study sample and may not be representative of all Rocketship alumni included in our study or of the larger Rocketship alumni population.

In the next sections we take a closer look at students' achievement on the NWEA MAP Assessments and the SBAC assessments.

NWEA MAP Assessments

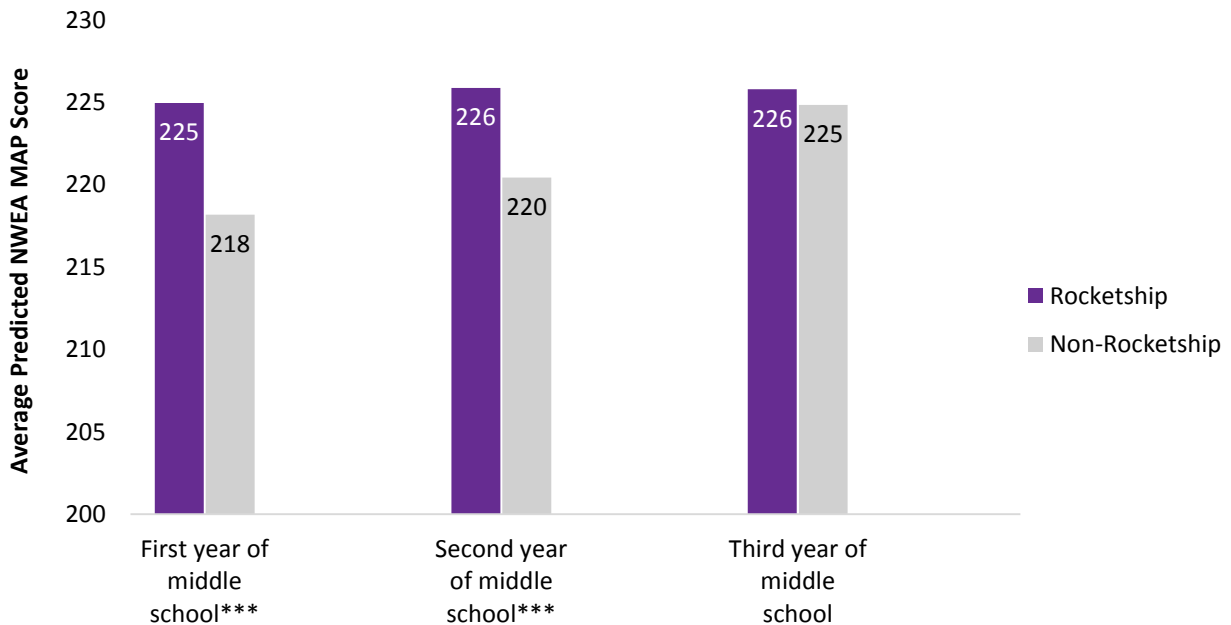
NWEA MAP assessments were designed to validly and reliably measure students' individual achievement and track improvements over time, and are widely used in school districts around the world (Northwest Evaluation Association, 2016).

Rocketship alumni in their first and second years of middle school outperformed their peers on the NWEA MAP math and reading assessments.

Rocketship alumni in their first year of middle school (5th and 6th grades) scored 7 points higher in math than similar non-Rocketship peers, on average, and Rocketship alumni in their second year of middle school

(6th and 7th grades) scored 6 points higher in math than similar peers, on average (see Exhibit 8). Nationwide, students in the 5th through 7th grades improve their MAP math scores by an average of 6.3 points each year (Northwest Evaluation Association, 2011). Therefore, the estimated differences for Rocketship alumni and their peers on the MAP math test are meaningful because these differences are equivalent to approximately one year of growth for the average 5th through 7th grade student in the US.¹³

Exhibit 8
Average Predicted NWEA MAP Math Assessment Scores for
Rocketship Alumni and Their Non-Rocketship Peers by Year in Middle School



* $p < .05$, ** $p < .01$, *** $p < .001$

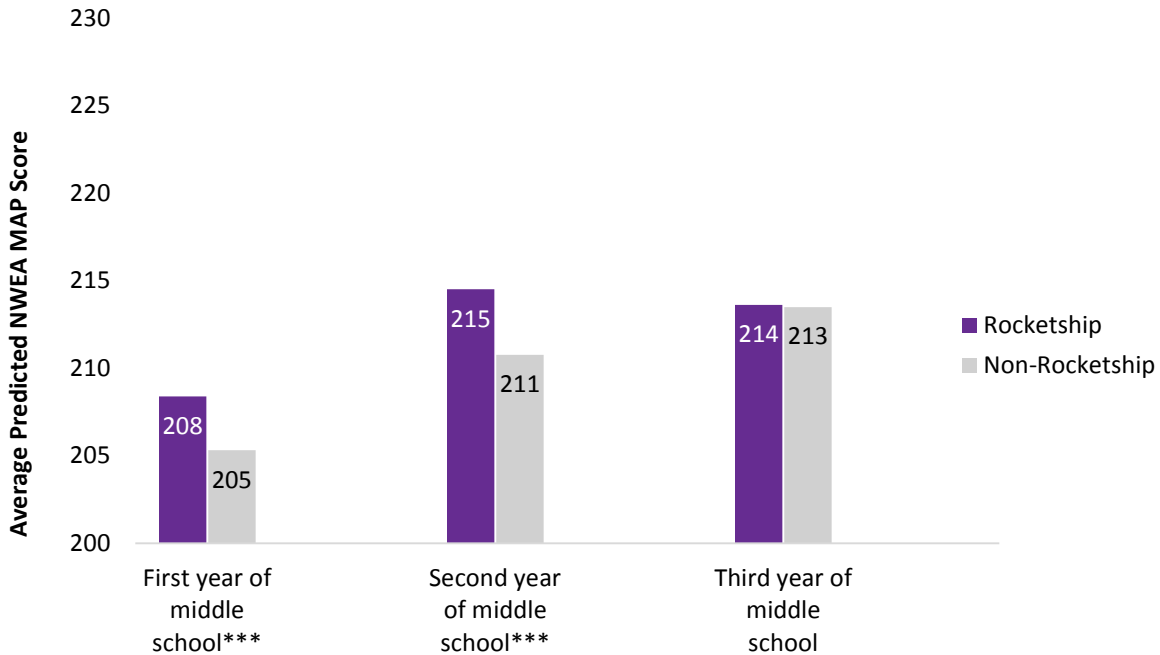
Source: Participating CMOs

Note: The average NWEA MAP scores for Rocketship alumni and their non-Rocketship peers have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression. The average national scores were created by averaging the end-of-year mean scale scores for 5th and 6th grades, 6th and 7th grades, and 7th and 8th grades to correspond to the first, second, and third year of middle school, respectively.

Similarly, Rocketship alumni scored 3 and 4 points higher in reading than their non-Rocketship peers in their first and second years in middle school, respectively (see Exhibit 9). Nationwide, students in the 5th through 7th grades improve their MAP reading scores by an average of 4.2 points each year (Northwest Evaluation Association, 2011). Thus, the estimated differences for Rocketship alumni and their peers on MAP reading test scores represent approximately one year of growth for the average student in the US.

¹³ Translating Rocketship effect sizes into years or months of learning may not be a valid comparison because the study sample differs from the national student sample. However, we found the comparison served as a useful reference point to contextualize the findings.

Exhibit 9
Average Predicted NWEA MAP Reading Assessment Scores for
Rocketship Alumni and Their Non-Rocketship Peers by Year in Middle School



* $p < .05$, ** $p < .01$, *** $p < .001$

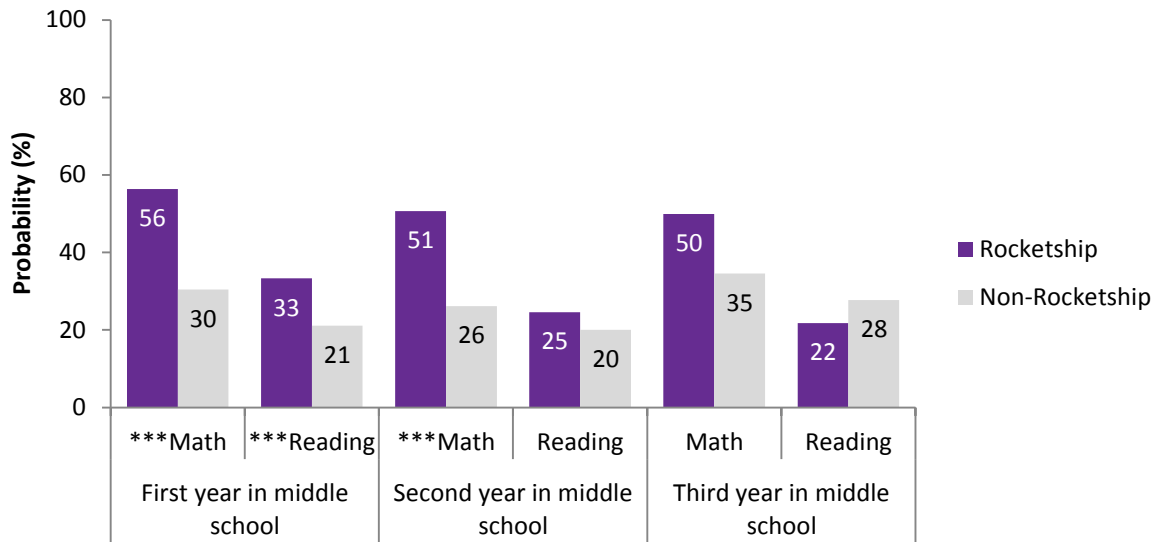
Source: Participating CMOs

Note: The average NWEA MAP scores for Rocketship alumni and their non-Rocketship peers have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression. The average national scores were created by averaging the end-of-year mean scale scores for 5th and 6th grades, 6th and 7th grades, and 7th and 8th grades to correspond to the first, second, and third year of middle school, respectively.

Rocketship alumni in their first year of middle school were more likely to score within the top 50th percentile on the NWEA MAP math and reading assessments than their non-Rocketship peers. Rocketship alumni in their second year of middle school were more likely to score within the top 50th percentile on the NWEA MAP math assessment than their non-Rocketship peers.

Rocketship alumni in their first year of middle school were 26 and 12 percentage points more likely to score within the top 50th percentile on NWEA MAP math and reading assessments, respectively, than their non-Rocketship peers, on average (see Exhibit 10). Similarly, Rocketship alumni in their second year of middle school were 25 percentage points more likely to score within the top 50th percentile on NWEA MAP math assessment than their non-Rocketship peers, on average. Although Rocketship alumni in their second year of middle school outperformed similar peers on the reading assessment, we found no differences in the probabilities of scoring within the top 50th percentile for Rocketship alumni in their second year of middle school and their non-Rocketship peers.

Exhibit 10
Average Predicted Probabilities of Scoring Within the Top 50th Percentile on the NWEA MAP Tests for Rocketship Alumni and Their Peers



* $p < .05$, ** $p < .01$, *** $p < .001$

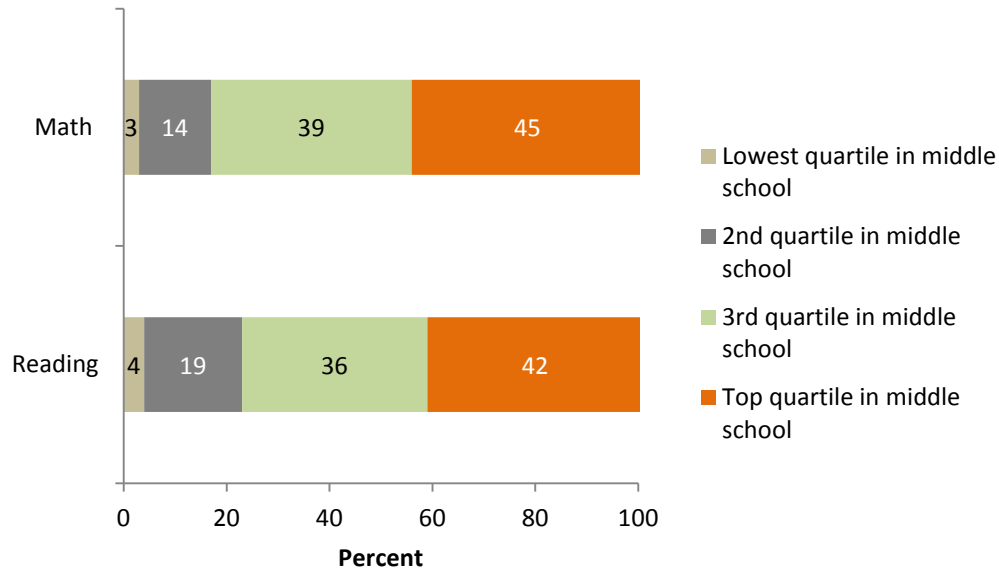
Source: Participating CMOs

Note: The average probabilities have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression.

The vast majority of Rocketship alumni who scored within the top two quartiles on the NWEA MAP math and reading tests in elementary school continued to score within the top two quartiles in middle school.

We examined the extent to which Rocketship alumni's performance levels were subject to change once Rocketship alumni entered middle school. To do so, we compared student performance quartiles for Rocketship alumni on the NWEA MAP math and reading tests in the spring of their last year in Rocketship with their performance quartiles in the spring of their first year in middle school. Specifically, in math, 84% of Rocketship alumni who scored within the top two quartiles in elementary school also scored within the top two quartiles in middle school (see Exhibit 11). In reading, 78% of Rocketship alumni who scored within the top two quartiles in elementary school also scored within the top two quartiles in middle school.

Exhibit 11
Middle School Performance Quartiles for Rocketship Alumni Who Scored Within the Top Two Quartiles on the NWEA MAP Tests in Elementary School



Source: Rocketship Education and Participating CMOs

Smarter Balanced Assessments

In 2014, the state of California established the California Assessment of Student Performance and Progress (CAASPP) System, which replaced the previous standardized testing and reporting program (STAR) system. (California Department of Education, 2016). This new system encompasses a series of assessments, including the new Smarter Balanced Assessment Consortium (SBAC) assessments, which measure student knowledge of the state’s English language arts/literacy and mathematics standards and are aligned with the Common Core State Standards (CCSS). SBAC assessments were first administered in the 2014–15 school year. The Smarter Balanced analyses and results presented in this report only reflect data from this initial administration of the assessments statewide.

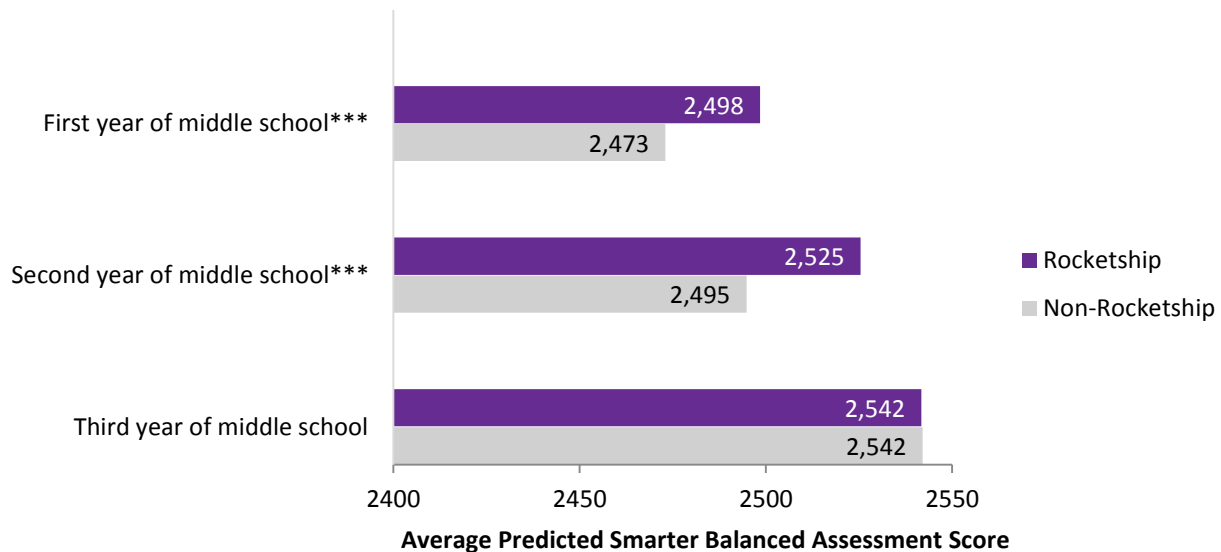
Rocketship alumni in their first and second years of middle school outperformed their non-Rocketship peers on the SBAC math assessment by approximately one year of expected growth. Rocketship alumni in their first year of middle school outperformed their non-Rocketship peers on the SBAC ELA assessment by approximately one half year of expected growth.

Rocketship alumni in their first and second years of middle school scored, on average, 25 and 30 points higher on the SBAC math assessment than their non-Rocketship peers, respectively (see Exhibit 12). Data from the first test administration show that students in the 5th through 7th grades may be expected to improve their performance in math by 18 points each year, on average (California Department of Education, 2015).¹⁴ Thus, the estimated differences for Rocketship alumni and their peers represent more than the expected annual growth for the average middle school student in California. This suggests that by

¹⁴ In California, students in the 8th grade scored 16 points higher than students in the 7th grade on the math Smarter Balanced Assessment, on average; students in the 7th grade scored 14 points higher than students in the 6th grade; and students in the 6th grade scored 24 points higher than students in the 5th grade.

the end of the first and second years of middle school, Rocketship alumni were more than one year ahead of their peers in math achievement.

Exhibit 12
Average Predicted Smarter Balanced Assessment Scores in Math
for Rocketship Alumni and Their Non-Rocketship Peers



* $p < .05$, ** $p < .01$, *** $p < .001$

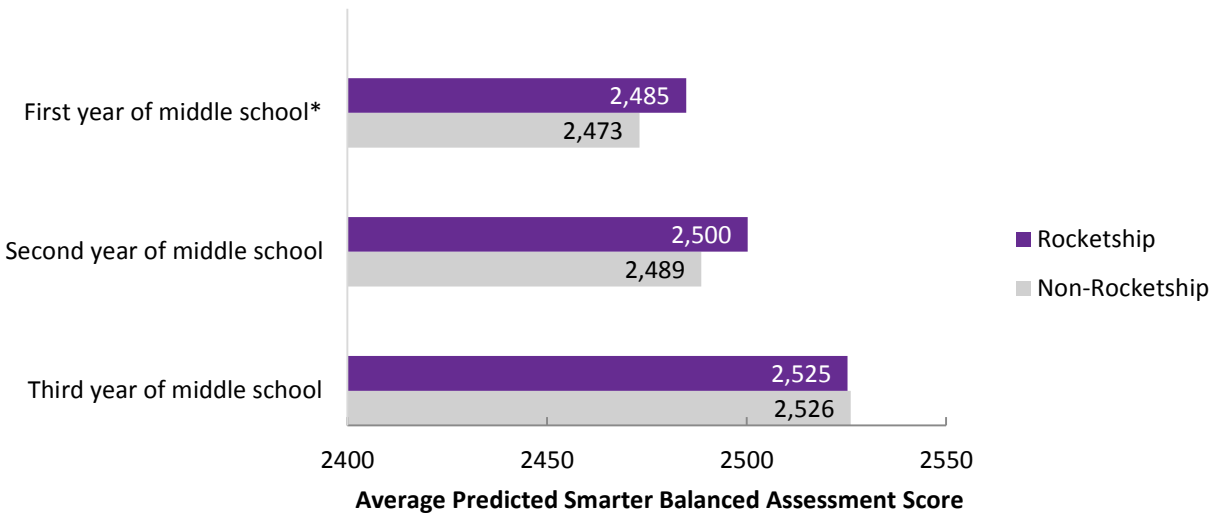
Source: Participating CMOs

Note: The average scores by grade have been adjusted for differences in students’ demographic characteristics, grade levels, and middle school attended using multiple linear regression.

On the SBAC ELA assessment, Rocketship alumni in their first year of middle school outperformed similar peers by almost 12 points, on average (see Exhibit 13). Statewide, students in the 5th and 7th grades may be expected to improve their performance in ELA by 22 points each year, on average (California Department of Education, 2015).¹⁵ This suggests that by the end of the first year of middle school, Rocketship alumni were half of one year ahead of their peers in reading achievement. We found no statistically significant differences in student performance on the SBAC ELA assessment for Rocketship alumni in their second year of middle school and similar peers.

¹⁵ In California, students in the 8th grade scored 21 points higher than students in the 7th grade on the ELA Smarter Balanced Assessment, on average; students in the 7th grade scored 20 points higher than students in the 6th grade; and students in the 6th grade scored 25 points higher than students in the 5th grade.

Exhibit 13
Average Predicted Smarter Balanced Assessment Scores in ELA
for Rocketship Alumni and Their Non-Rocketship Peers



* $p < .05$, ** $p < .01$, *** $p < .001$

Source: Participating CMOs

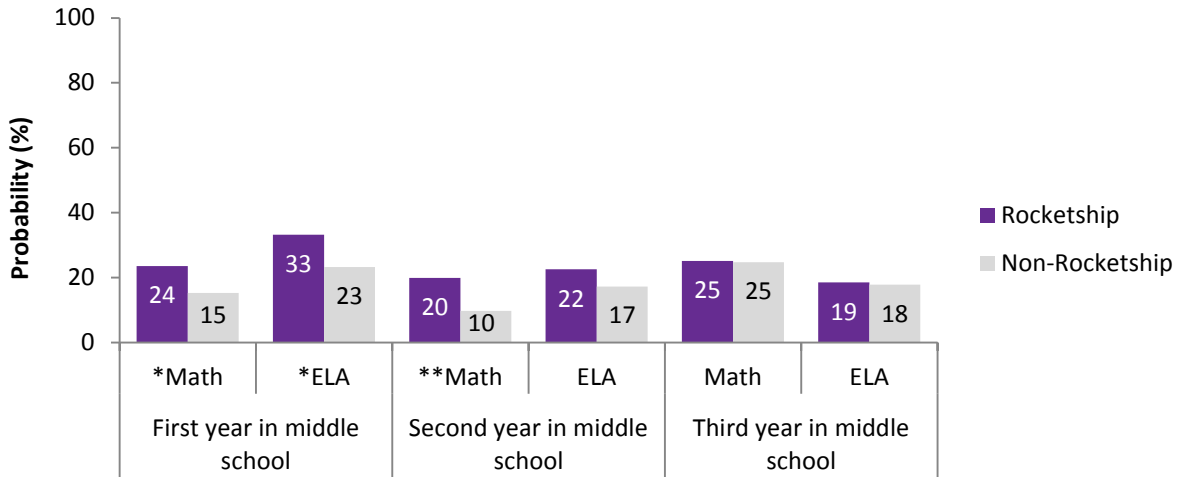
Note: The average scores by grade have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression.

Rocketship alumni in their first year of middle school were more likely to meet or exceed standards on the SBAC math and ELA Assessments than their non-Rocketship peers. In addition, Rocketship alumni in their second year of middle school were more likely to meet or exceed standards on the SBAC math assessment than their non-Rocketship peers.

On average, Rocketship alumni in their first year of middle school were 9 and 10 percentage points more likely to meet or exceed standards on the SBAC math and ELA assessments than their non-Rocketship peers, respectively (see Exhibit 14). In their second year of middle school, Rocketship alumni were 10 percentage points more likely to meet or exceed standards on the SBAC math assessment than their non-Rocketship peers, on average. There were no differences in performance levels on the SBAC ELA assessment between Rocketship alumni in their second year of middle school and their non-Rocketship peers.

Exhibit 14

Average Predicted Probabilities of Meeting or Exceeding Standards on the Smarter Balanced Math and ELA Assessments for Rocketship Alumni and Their Peers



* $p < .05$, ** $p < .01$, *** $p < .001$

Source: Participating CMOs

Note: The average probabilities have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression.

In summary, Rocketship alumni often perform better than their peers on standardized assessments. We saw that Rocketship alumni consistently outperformed their peers in math in their first and second years in middle school, and they consistently outperformed their peers in reading/ELA in their first year of middle school.

To further explore Rocketship alumni's experience in middle school the next section will present the survey and focus group findings, which assessed students' experience with their transition to middle school, their socio-emotional attitudes and mindsets, academic behaviors, academic aspirations, and school satisfaction levels.

Middle School Transition

The transition from elementary to middle school can be challenging as families select which middle school to attend and students adapt to a new school environment. Studies have indicated that this period in students' lives is often associated with increased psychological stress as well as a decline in students' academic performance and motivation, leading to lowered feelings of academic competence (Akos, & Galassi, 2004; Anderman & Midgley, 1997; Chung et al., 1998; Harter, 1981; Theriot & Dupper, 2009). A decline in academic performance can translate directly into decreases in students' satisfaction with their middle school experience. However, such outcomes can be mediated by how well prepared students are to navigate the changing academic expectations and social environment of their new school.

In the next few sections, we examine Rocketship alumni's perception of their transition to middle school, including their experience with school selection, preparation for, and satisfaction with middle school, based on survey and focus group data.

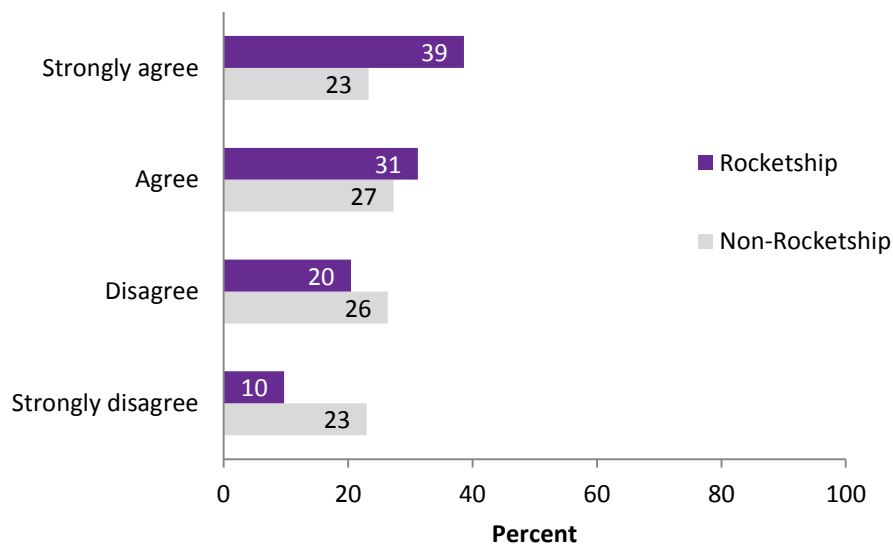
Middle School Choice and Enrollment

In this section, we explore Rocketship students' and their families' experience in selecting which middle school to attend, and the factors that influenced the type of school (charter or noncharter) in which they decided to enroll.

Rocketship alumni were more likely than their non-Rocketship peers to report being involved in choosing their middle school.

All students in the study sample were enrolled in local charter middle schools. Of those students, Rocketship alumni were more likely than their non-Rocketship peers to report that they personally chose to attend their current middle school (Exhibit 15). Specifically, 70% of Rocketship alumni agreed or strongly agreed with the statement, "I chose to go to this middle school," compared with 50% of their non-Rocketship peers. Rocketship alumni in the first-year focus group similarly described taking an active role in deciding which middle school to attend. One student explained, "I knew [this middle school] was one of the top schools, and I made a goal for [myself] to [attend this school].... I [asked my family] 'Can I go to [this middle school]?' and they said, 'We'll try.'... That really motivated me to just try to go there."

Exhibit 15
Students' Responses to Survey Item "I chose to go to this middle school"***



Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
Source: Middle School Student Survey

This difference in students' sense of involvement in choosing their middle schools may be attributed to Rocketship's hands-on approach to informing their families about their middle school options, whether through direct recommendations from teachers or through information sessions. Many parents and former Rocketship students in the first-year focus groups noted feeling supported by Rocketship staff members in choosing which middle school to attend. Parents highlighted personalized recommendations from teachers as well as schoolwide middle school information sessions as particularly beneficial. One parent explained, "[Rocketship teachers] would ask us, 'Do you want your child to go [to this middle school]?' I have the form right here.' And they would give it to us so we could sign [our child] up." Another parent added,

“[Rocketship teachers] help so much with their [middle] school recommendations. They say things like, ‘I like this school because of this reason, this school is better for this reason, and this one for that reason, etc.’”

Preparation for Middle School

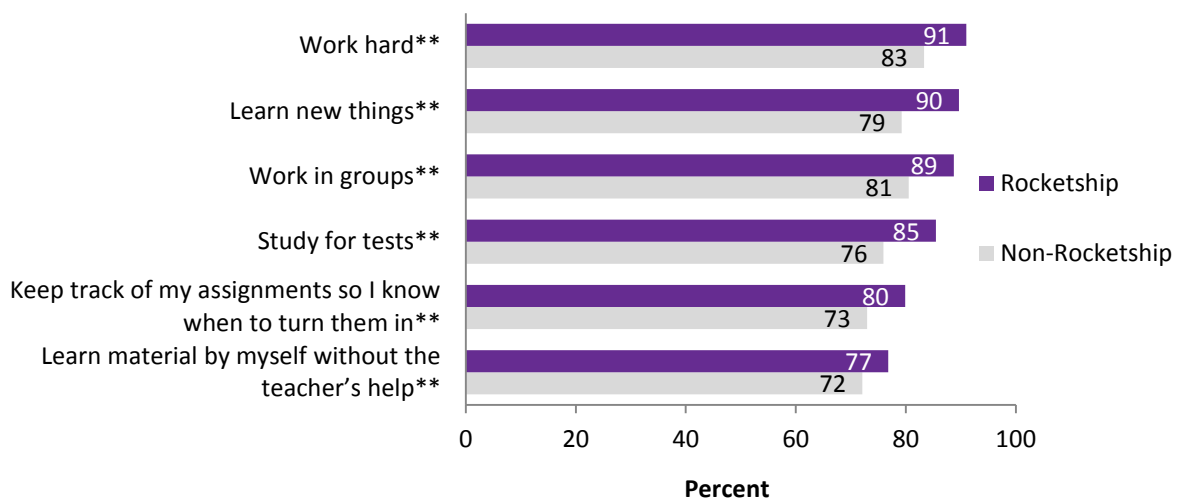
Students and parents during the first round of focus groups described receiving assistance from Rocketship as they selected which middle school to attend, as well as support from Rocketship teachers and staff that helped ease students’ transition to middle school by preparing students culturally (e.g., instilling positive attitudes and habits) and academically. The student survey further indicated that a majority of Rocketship alumni credited their elementary school experience with helping them develop skills necessary for middle school success. In contrast, Rocketship alumni focus group participants in their second year of middle school admitted to feeling underprepared for middle school, including feeling unprepared for the rigor of middle school math, as well as feeling challenged in adapting to new expectations around homework. We do not know if these concerns were widespread across the schools because we did not conduct focus groups with non-Rocketship students.

The majority of Rocketship alumni and their non-Rocketship peers reported that their elementary school helped them develop a variety of skills necessary for middle school success. However, Rocketship alumni were more likely to attribute their preparedness for middle school to their elementary school experience than their non-Rocketship peers.¹⁶

The student survey included items intended to gauge how well students’ elementary schools prepared them on a variety of skills that demonstrate a positive orientation toward learning, such as collaboration, hard work, time management, and independence. Rocketship alumni were more likely than their non-Rocketship peers to agree or strongly agree that their elementary school prepared them to work hard (91% and 83%, respectively), learn new things (90% and 79%), work in groups (89% and 81%), study for tests (85% and 76%), keep track of their assignments (80% and 73%), and learn independently (77% and 72%) (Exhibit 16). First-year focus group findings reflected this attribution of preparedness to students’ Rocketship experience. For example, in the first-year focus group, one student reported that his Rocketship teachers *“prepared me [for middle school] and helped me understand how important studying is.”* Another student explained, *“I felt really prepared because my teachers helped me so much. I learned a lot, and I really want to put that to use for fifth grade. And because also they taught us a lot of things about fifth grade, which will get me ready for it.”*

¹⁶ Even when controlling for students’ demographic characteristics, Rocketship alumni were still more likely to attribute their middle school preparedness to their elementary schools. The effect size was one-fifth of a point on the 4-point survey scale, on average.

Exhibit 16
Rocketship Alumni and Non-Rocketship Peers Who Agreed or Strongly Agreed That Elementary School Helped Them Develop Skills Needed for Middle School Success



Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
 Source: Middle School Student Survey

Rocketship alumni elaborated on these ideas in the first-year focus groups. Specifically, they stated that they felt confident they could handle the academic rigor of middle school and valued the preparation they received for middle school while at Rocketship. One student expressed feeling nervous about middle school at first but then excelling: *“I felt nervous because I knew I was going to middle school, and I’ve heard people [say] that middle school has been hard. But actually Rocketship made it easier for me [in] middle school [be]cause right now I am getting straight A’s.”* Student focus group participants described ways in which they displayed positive academic behaviors in middle school: asking for help when they needed it, avoiding distractions, paying attention in class, and working hard. Other Rocketship alumni emphasized that Rocketship *“gave [them] discipline.”* Students listed ways that Rocketship prepared them for success in middle school, noting that Rocketship teachers, *“tell us to raise our hand,” “make us redo sloppy work,”* and *“[teach us to] track the speaker.”*

During the first-year focus groups, parents also remarked that their children learned values at Rocketship that positively affected their performance in middle school. One parent reported, *“[Rocketship] show[ed] [students] discipline and punctuality, and [Rocketship] rewards them for it. They do the same at [my child’s] new [middle] school, and I think [my child is] motivated. [Rocketship] has good habits.”* In addition, parents characterized their children as “academically ahead” as a result of their experience at Rocketship, a sentiment that their children echoed and that was reflected in the outcomes analyses.

However, during the second-year focus groups, students’ expressed more negative sentiments regarding their sense of preparation for middle school. Students reported struggling in their math classes specifically, and discussed the challenges they faced in adjusting to what they perceived as more stringent homework expectations in middle school.

While the outcomes analysis indicated that Rocketship students consistently outperformed their peers on standardized math assessments in their first and second years in middle school, students who participated in the second-year focus groups reported struggling with math. Specifically, students discussed not knowing how to show their work in math, which they described as a regular expectation in middle school. Some

students attributed this challenge to the belief that they were not held to the same level of expectation in elementary school, or to a perceived lack of support from their elementary school math teachers; however, this challenge may also stem from the new mathematical practices and expectations embedded in the Common Core and related Smarter Balanced assessments. Such expectations for “showing one’s work” may be new to students whose prior classrooms were more oriented to the previous California Standards Test.

Similarly, students described feeling challenged in adapting to new homework practices and expectations in middle school. Specifically, students highlighted the challenge of going from receiving one homework packet a week at Rocketship, to being responsible for completing homework on a daily basis in middle school. They also talked about differences in terms of teachers’ expectations, and their sense that their elementary teachers did not hold them accountable for completing their work or ensuring that it was correct, which they see as a stark contrast to the expectations they now face in middle school. One student noted, “It’s true that when people don’t know answers to the homework and they just guess and get it wrong, [this does not] prepare them when they go to a new school...because they didn’t get help from the teacher to get a better answer.” As a result of facing such challenges, students talked about having had to adjust their time management and study habits to fit their current middle school environment.

Satisfaction with Middle School

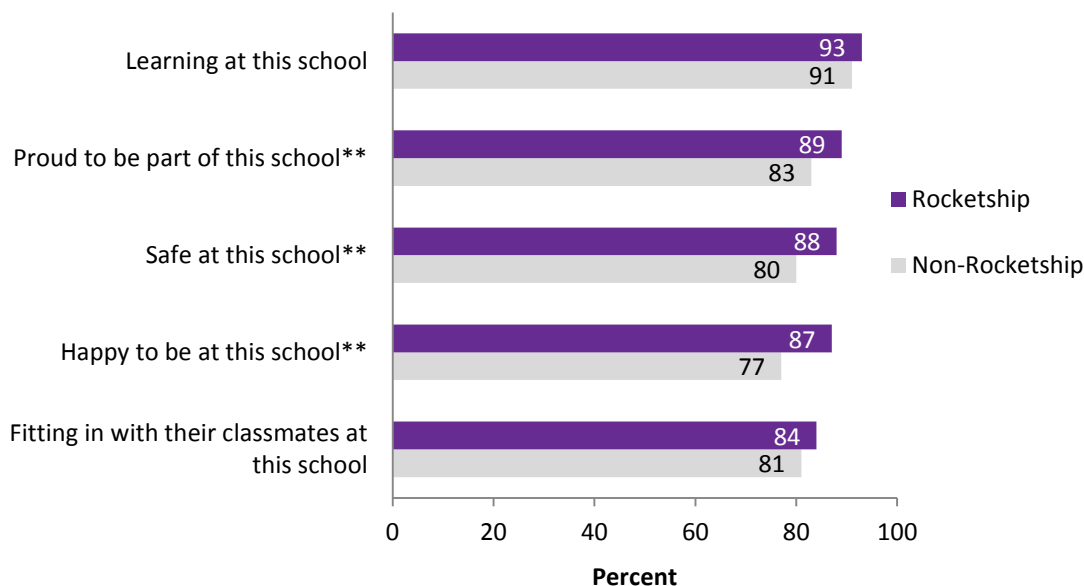
Research suggests that a sense of belonging in middle school is associated with greater engagement, motivation, and commitment to school (Osterman, 2000). According to our middle school student survey results, Rocketship alumni reported higher satisfaction with middle school than their non-Rocketship peers. Rocketship students in the first- and second-year focus groups echoed this strong sense of belonging in and satisfaction with middle school.

The majority of all Rocketship alumni and their non-Rocketship peers reported strong agreement with positive statements about their sense of belonging in middle school. However, Rocketship alumni were more likely than their non-Rocketship peers to report feeling proud, safe, and happy in middle school.

The majority of all Rocketship alumni and their non-Rocketship peers agreed or strongly agreed with positive statements about their sense of belonging in middle school. However, Rocketship alumni were more likely than their non-Rocketship peers to agree or strongly agree to positive statements about their sense of belonging in middle school related to feeling proud, safe, and happy in school. Specifically, more Rocketship alumni reported feeling proud to be part of their school than their non-Rocketship peers (89% and 83%, respectively), feeling safe at their school (88% and 80%), and feeling happy to be at their school (87% and 77%) (Exhibit 17).

Additionally, while there were no statistically significant differences between Rocketship alumni and their non-Rocketship peers, a majority of all surveyed students reported feeling that they were learning at their middle school and that they fit in with their fellow classmates. Rocketship alumni who participated in the first-year focus groups shared that the prevalence of former Rocketship peers at their middle school provided them with an added sense of belonging. One focus group participant described that he was excited about attending his charter middle school because he knew he would see other Rocketship alumni there: “I know I can meet my friends ... my friends are going to go to that school, too.” Such findings are important because a sense of belonging in school has been shown to be positively correlated with academic motivation (Goodenow, 1993).

Exhibit 17
Rocketship Alumni and Non-Rocketship Peers Who Agreed or Strongly Agreed to Survey Items About Belonging in Middle School



Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
 Source: Middle School Student Survey

Students in the second-year focus groups echoed feelings of satisfaction with their current middle school, particularly with regard to what they perceived as a strong learning environment.

Students in the second-year focus groups described feeling strongly supported and valued by their middle school teachers. One student commented, “If you’re not good at something, teachers [here] try their best to help you out. [They] try their best to separate the people who need a little bit more help than others and try to help them out a little bit more.” Another student similarly noted, “[Teachers at this school] put me as like their first priority and I really like that.” Students also described their teachers’ willingness to provide additional support as needed and stay after school, as well as their willingness to reach out to students and inquire about any challenges they may be facing, which students appreciated. One student noted, “I like this school because the teachers they want you to go to after school so they can teach you the lesson that you missed.” Another student commented, “At this school, they ask you if you need help or if you’re having problems at home or having trouble in school and they ask you to talk to them.”

Students also shared positive sentiments about their middle schools more broadly, including the sense that their schools are invested in preparing all students for middle school and beyond. One student reported, “I think this school is pretty good; it’s well balanced and also extremely helpful for everyone, not just like half the people, like everyone, not 99% but 100% because they care about everyone like one team and family. You think of everyone as one person and they help each other and help them grow and go through and to college.”

Student Behaviors and Attitudes

Researchers and educators emphasize the importance of behaviors and attitudes in the relationship between students' experiences at school and their academic performance. Numerous studies have found that positive academic behaviors along with positive mindsets can lead to student achievement gains (Farrington et al., 2012). Given Rocketship's focus on developing positive academic behaviors and attitudes in students, we explored how Rocketship alumni and their peers rated themselves on the following behaviors and attitudes:¹⁷

- **Growth mindset** (i.e., students' beliefs about whether their intelligence can improve)
- **Positive academic behaviors in class** (e.g., paying attention in class and coming to class prepared)
- **Grit** (e.g., persistence)
- **Management skills** (e.g., setting goals, organizing schoolwork, and managing time)
- **Study skills** (e.g., checking for understanding, reviewing notes, and prepping for tests)
- **Motivation to learn** (i.e., eagerness to learn, understand new things, and learn new skills)
- **Motivation to learn math or ELA content** (i.e., eagerness to learn math or ELA content)
- **Self-efficacy to do well in middle school** (e.g., students' confidence in their ability to learn content, complete all work, and earn good grades in middle school)
- **Self-efficacy to do well in math or ELA** (i.e., students' confidence in their ability to do well in their math or ELA class)

Presented here are findings on students' self-reports of their attitudes, mindsets, and behaviors.

The majority of Rocketship alumni and their non-Rocketship peers indicated agreement on survey items measuring socio-emotional attitudes and mindsets.¹⁸ Agreement on items regarding motivation and grit was especially high.

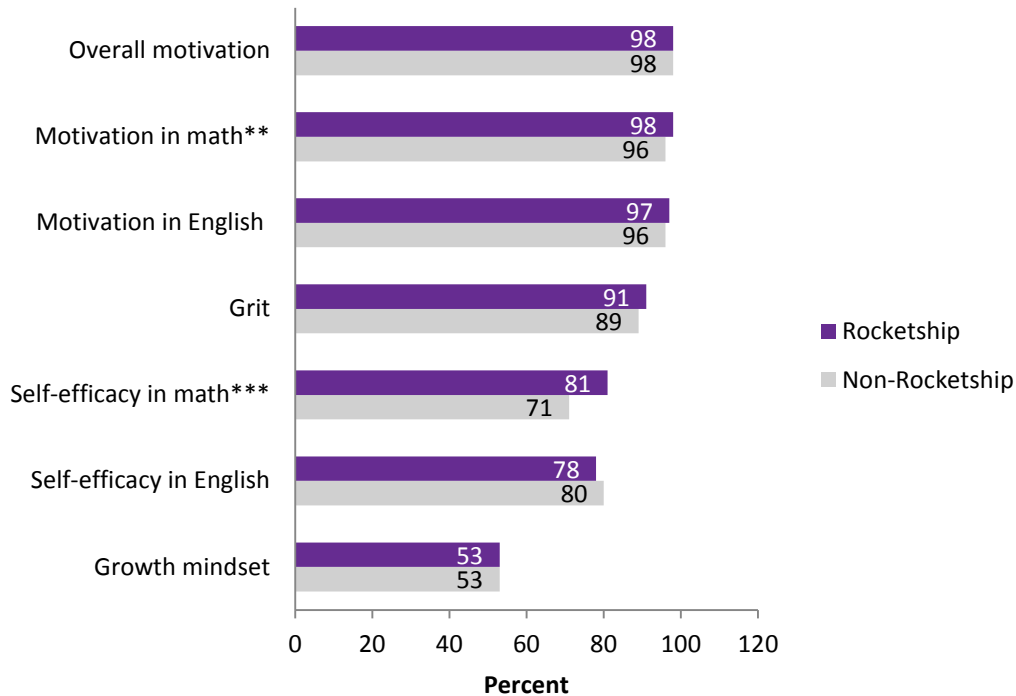
Most Rocketship alumni and their peers agreed with items indicating high levels of self-efficacy and motivation in math, but Rocketship alumni were more likely to strongly agree to these items than their peers (Exhibit 18). Further, 81% of Rocketship alumni reported high levels of self-efficacy in math compared with 71% of non-Rocketship peers. Although there were no statistically significant differences between Rocketship alumni and their peers on the remaining socio-emotional factors, the high proportion of all students who reported agreement on these items is promising. Almost all students (98%) reported agreement on survey items on general academic motivation (e.g., "I want to learn new things"). Similarly high percentages of all students reported agreement on survey items measuring motivation to learn in math and English (e.g., "One of my goals in my [Math/English] class is to learn as much as I can") as well as items designed to measure grit (e.g., "I finish whatever I begin at school"). Between 70% and 80% of Rocketship alumni and their non-Rocketship peers agreed or strongly agreed to items measuring self-efficacy to learn. However, just over half of students in both groups agreed or strongly agreed to items measuring a "growth mindset" (Exhibit 18). Such survey items included questions about students' ability to affect their intelligence—in other words, having a fixed versus a growth mindset. Some students in the first-year focus groups talked about what they learned regarding grit and self-efficacy. One student reported,

¹⁷ Please see technical appendix for all relevant survey items for each student behavior or attitude.

¹⁸ There were statistically significant differences between Rocketship alumni and their non-Rocketship peers in self-efficacy in math and motivation in math, but these differences were explained by differences in demographic characteristics.

“Rocketship told me how you always have to work hard, never give up, and see that you could work hard.” Another student said that in order to learn something difficult, you need to “practice and practice.”

Exhibit 18
Rocketship Alumni and Non-Rocketship Peers Who Agreed or Strongly Agreed to Items Indicating Positive Attitudes and Mindsets



Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
 Source: Middle School Student Survey

Although the majority of middle school students reported high levels of self-efficacy, motivation, and grit, only about half reported positive perceptions about their ability to learn and grow (i.e., growth mindset).

Research has shown that having a growth mindset is positively correlated with student learning gains and can also help support the development of other positive dispositions, particularly perseverance (Blackwell, Trzesniewski, & Dweck, 2007; Shechtman, DeBarger, Dornsife, Rosier, & Yarnall, 2013). Our survey results indicated that, overall, more Rocketship alumni and their non-Rocketship peers agreed with statements about grit (e.g., “I finish whatever I begin,” “I am a hard worker at school”) than with statements about growth mindset. This discrepancy may suggest that Rocketship alumni and other middle school students internalize the message that working hard toward a goal is very important but may not fully understand that intelligence is malleable and can grow with effort.

Additionally, when asked in a focus group “Do you think you need to be intelligent to do well in classes?” one student explained, “Maybe; not necessarily. Just paying attention. You don’t have to be like super smart or advanced to pass a class or anything like that. You just need to follow the rules that the teachers set for you.” This student’s response indicated that intelligence is not as important as other things like positive academic behaviors (such as following the rules) but did not go so far as to imply that intelligence is malleable.

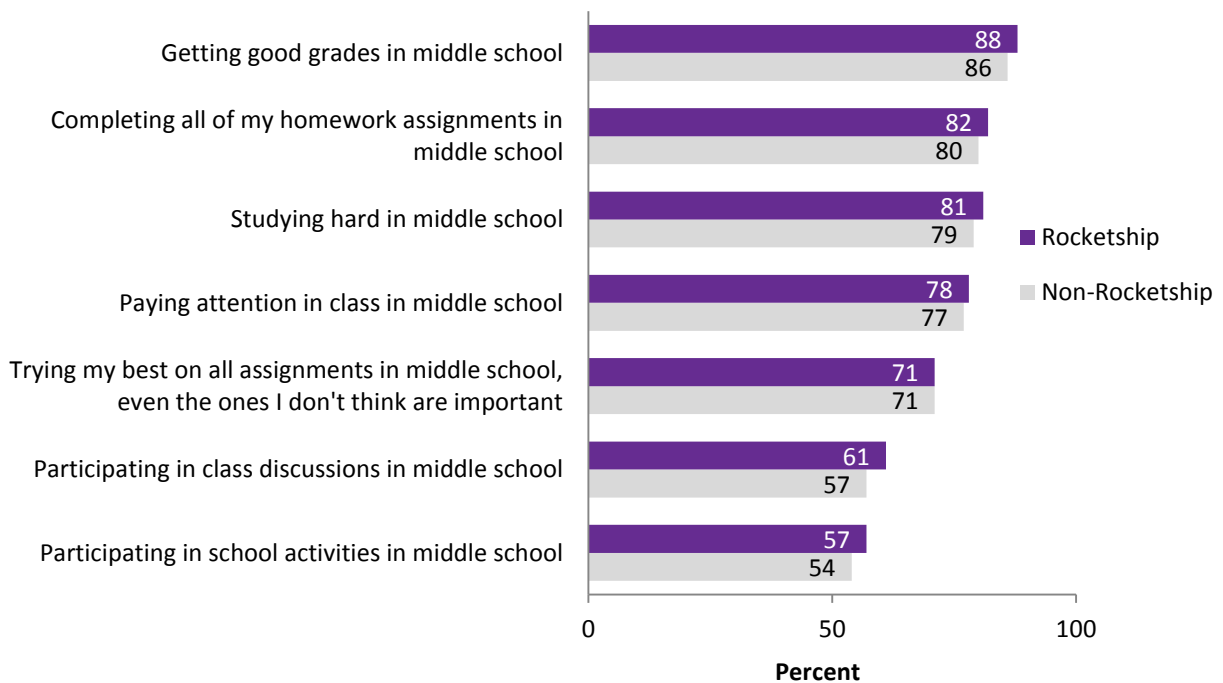
Academic Behaviors and Aspirations

Academic behaviors, such as not missing school and completing one’s homework, have a direct relationship with academic performance. Students recognize the importance for such academic behaviors in preparing them for high school and beyond. The following section provides findings on students’ longer-term academic aspirations and the behaviors they believe are important to meet their goals.

The majority of Rocketship alumni and their non-Rocketship peers reported that it is very important to engage in various positive academic behaviors in middle school to prepare them for high school.

When asked about how important various activities were to prepare students for high school, the majority of Rocketship alumni and their peers reported that while in middle school, it was very important to engage in various academic behaviors. In particular, 88% of Rocketship alumni said it was ‘very important’ to get good grades, 82% said it was ‘very important’ to complete all homework assignments, and 81% said it was ‘very important’ to study hard in middle school (Exhibit 19).

Exhibit 19
Rocketship Alumni and Non-Rocketship Peers Who Believed Academic Behaviors in Middle School Were ‘Very Important’ to Academic Success in High School



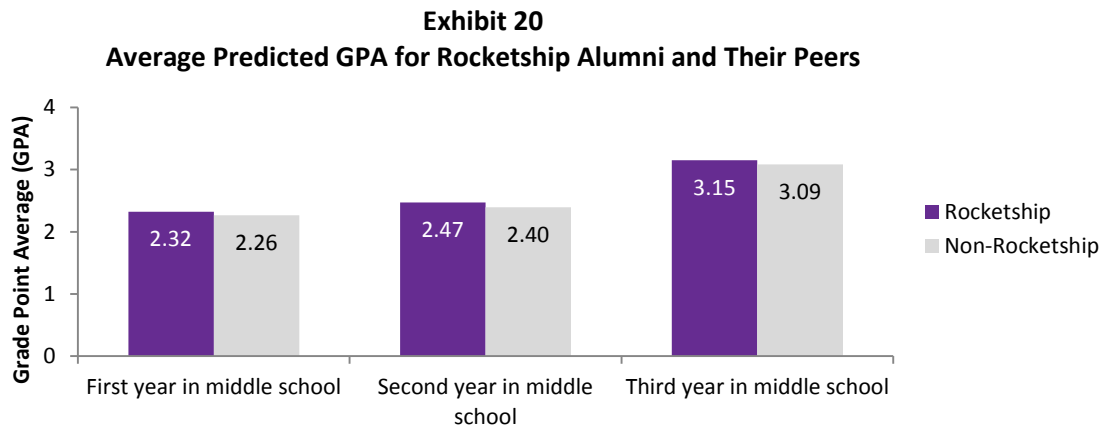
Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$

Source: Middle School Student Survey

Note: There were no statistically significant differences for Rocketship alumni and their peers.

Rocketship alumni and their peers had similar grade point averages (GPAs) in each year of middle school. In general, both groups' GPAs rose each year.

While grading is highly variable, research has found that grade point averages (GPAs) are a predictor of long-term student achievement. Researchers agree that grades reflect a combination of students' content knowledge and academic skills across all graded subjects, as well as a range of behaviors (e.g., attendance, class participation, etc.), attitudes (e.g., motivation, positivity, etc.), and strategies around school work (Farrington et al., 2012). Even though GPA is a relatively subjective measure of student achievement, studies have shown that middle school GPA is one of the strongest predictors of high school outcomes (i.e., standardized math and ELA test scores, and high school graduation) (Kurlaender, Reardon, & Jackson, 2008). More specifically, 8th-grade GPA was found to be the best predictor of being on-track at the end of 9th grade (Allensworth, Gwynne, Moore, & de la Torre, 2014). Our analyses of students' GPAs show little variation in the average GPAs between Rocketship alumni and their peers across students' first, second, and third years in middle school after controlling for students' demographic characteristics. Additionally, by the time Rocketship alumni and their peers reached their third year in middle school, they received an average 3.15 and 3.09 GPA, respectively, equating to approximately a B average (Exhibit 20). Therefore, Rocketship alumni and their non-Rocketship peers may subsequently continue to be on-track in 9th grade.



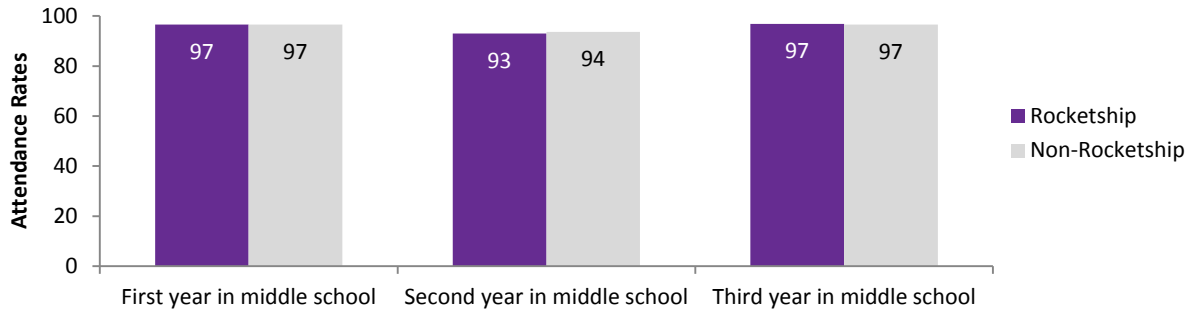
Source: Participating CMOs

Note: The average GPAs have been adjusted for differences in students' demographic characteristics, grade levels, and middle school attended using multiple linear regression.

Rocketship alumni and their peers had high attendance rates in each year of middle school.

Research studies suggest that consistent attendance is an important prerequisite for students' success in school. Specifically, studies have shown that high attendance rates are correlated with stronger academic achievement (Roby, 2004). Additionally, researchers studying on-track indicators and high school graduation rates found that attendance was a crucial indicator for staying on track to graduate. Given the suggested importance of school attendance on students' academic outcomes, we examined attendance rates for Rocketship alumni and their peers as part of this study and found that all students exhibited high attendance rates in each year of middle school (ranging from 93% to 97%). Additionally, we found that attendance rates were largely consistent across groups for each year in middle school (Exhibit 21). While we cannot directly attribute students' academic performance in middle school to such high attendance rates given the limitations of this study, such rates may suggest a correlational relationship.

Exhibit 21
Average Predicted Attendance Rates for Rocketship Alumni and Their Peers



Source: Participating CMOs

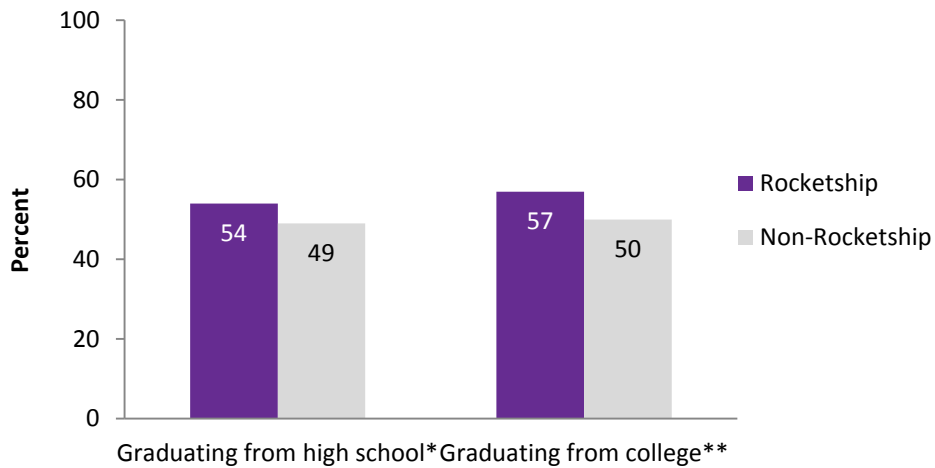
Note: The average attendance rates have been adjusted for differences in students’ demographic characteristics, grade levels, and middle school attended using Poisson regression.

After exploring students’ perceptions of their transition to middle school, academic preparedness, and attitudes and mindsets, as well as their actual GPA and attendance rates, we now turn to students’ longer-term academic aspirations, including the importance of graduating from high school and college.

The majority of Rocketship alumni and their peers reported that graduating from high school and college is very important to them. However, Rocketship alumni were more likely than their non-Rocketship peers to report that their friends also think graduating from high school and college is very important.

The majority of Rocketship alumni and their non-Rocketship peers reported that graduating from high school (92% and 91%, respectively) and college (95% and 91%, respectively) is ‘very important’ to them. However, only 54% of Rocketship alumni said that graduating from high school is ‘very important’ to their friends, compared with 49% of their non-Rocketship peers. Regarding college, 57% of Rocketship alumni reported that graduating from college was ‘very important’ to their friends, compared with 50% of their non-Rocketship peers (Exhibit 22). Such findings are notable because research has shown that peer effects are a chief determinant of actual educational achievement. In other words, what one thinks their friends value is important to their academic success (Zimmer & Toma, 2000).

Exhibit 22
Rocketship Alumni and Non-Rocketship Peers Who Indicated Graduating from High School and College Is 'Very Important' to Their Friends



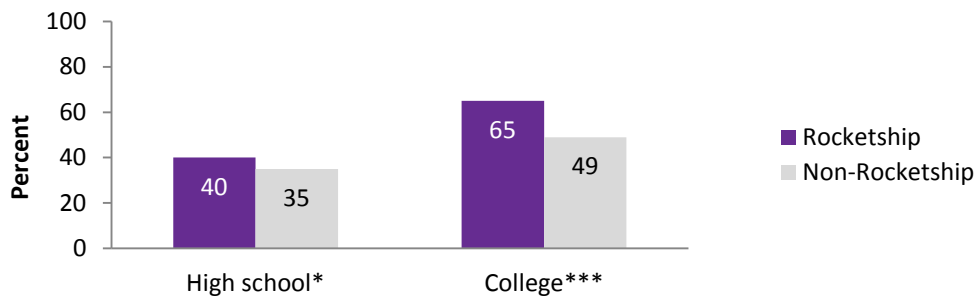
Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
 Source: Middle School Student Survey

Rocketship alumni were more likely than their non-Rocketship peers to report that someone at their elementary school talked with them about planning for high school and college.

Survey data indicated that Rocketship elementary schools began conversations about higher education with their students. Forty percent of Rocketship alumni reported that a staff member at their elementary school talked with them about planning for high school, compared with 35% of their non-Rocketship peers (Exhibit 23).

Sixty-five percent of Rocketship alumni reported that a staff member at their elementary school talked with them about planning for college, compared with 49% of their non-Rocketship peers. These early conversations about postsecondary expectations create norms for graduating from high school and attending college. Research shows that high expectations coupled with a supportive learning environment are correlated with higher rates of academic success and lower rates of problem behaviors, such as dropping out of school (Bernard, 1995).

Exhibit 23
Rocketship Alumni and Non-Rocketship Peers Reporting That Someone at Their Elementary School Talked with Them About Planning for High School and College



Chi-Square Test, * $p < .05$, ** $p < .01$, *** $p < .001$
 Source: Middle School Student Survey

Conclusion and Areas for Future Research

This report examined Rocketship alumni's academic performance in middle school compared to peers who did not attend a Rocketship elementary school. The report also explored Rocketship alumni's experiences in the transition to middle school, socio-emotional attitudes and mindsets, academic behaviors, and future academic aspirations. These analyses reveal positive academic outcomes for Rocketship alumni in middle school, especially in math. Further, both Rocketship alumni and their peers in middle school reported high-levels of various positive socio-emotional attitudes and mindsets, and reported having long-term academic goals.

Findings from this evaluation reveal meaningful, positive outcomes for Rocketship alumni; however, limitations in the study design prohibit us from drawing conclusions about causality. We recommend further research to continue exploring the relationship between students' experiences in a Rocketship elementary school and their educational outcomes in middle school and beyond. Specifically, a study that uses a random assignment design and accounts for any systematic differences between students who attended a Rocketship versus non-Rocketship school would more clearly isolate the effects of Rocketship on students' long-term academic achievement and social development.

Additionally, as Rocketship Education continues to focus on closing the achievement gap in disadvantaged communities nationwide, it will be important to understand and maintain elements of the model that currently serve students well, as well as improve upon elements of the model that indicate continued room for growth. Thus, further research examining particular components of the Rocketship model—including academic interventions for students, educational software, and content-specific instructional practices, as well as the impact of such programmatic components on student outcomes—would provide useful insight for continuous improvement of the Rocketship model. For instance, a robust study that uncovers why Rocketship alumni in middle school consistently outperform their peers in math, but show more varied results in ELA/reading—as this evaluation indicates—would be beneficial to Rocketship and other educational institutions serving comparable student populations who exhibit similar achievement patterns. Studies that seek to illuminate and document the socio-emotional strategies used in Rocketship elementary schools and the impact on long-term student outcomes would also be valuable to practitioners and educational institutions serving traditionally underserved students.

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